THE IRON AGE

New York, November 26, 1925

ESTABLISHED 1855 VOL. 116, No. 22

Reducing Sand Handling Costs

Conveyors for Unloading Incoming Cars and Elevators and Dump Trucks for Removing Sand from Storage to Mixer Eliminate Labor

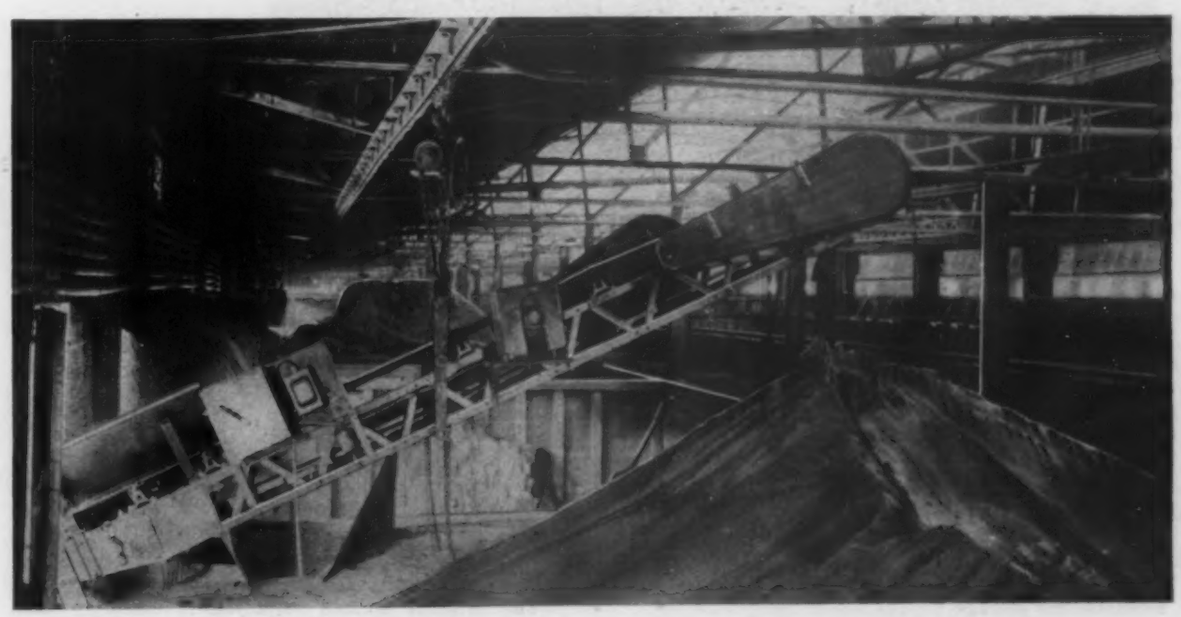
NINETY-FIVE per cent of the labor cost of unloading sand into storage has been eliminated by three conveyors recently installed at the No. 1 foundry of the Allis-Chalmers Mfg. Co., West Allis, Wis. A great saving has also been effected through the use of elevators and dump trucks for handling sand from storage to the sand mixer. The importance of the improvements is indicated by the fact that over 600 carloads of sand are received at the plant annually.

On the west side of this plant is a gallery in which a section, approximately 30 ft. wide by 100 ft. long, is used for storing the winter's supply of facing and core sands. Space at the north end of the gallery, about 215 ft. long, is used for storing molding sand. The north central section of the gallery south of the molding sand storage, for a distance of approximately 190 ft., is used for unloading bank and black sand used in sand mixtures. At the south end of the gallery, for a distance of 215 ft., are bins, 24 ft. wide and 8 ft. high, which are used for storing fire clay, loam sand and other special sands.

Sand was formerly shoveled from open gondola cars on an adjacent elevated railroad trestle through windows directly into the gallery. The sand was then rehandled, being stacked by hand to a maximum height. The northern portion of the gallery was used mainly for storing of molding sand of one kind, while the southern section was used for numerous grades of sand which required bins to keep them separated. Sand was unloaded from cars at a piece work rate of 15c. per ton. The rehandling costs were estimated as follows: for molding sand, 50c. per ton; for bank and black sand, 30c. per ton, and for the various grades of sand stored in the bins, 40c. per ton.

Records for 1924 show that 484 cars were unloaded in the northern portion of the sand storage gallery and 125 cars in the southern section.

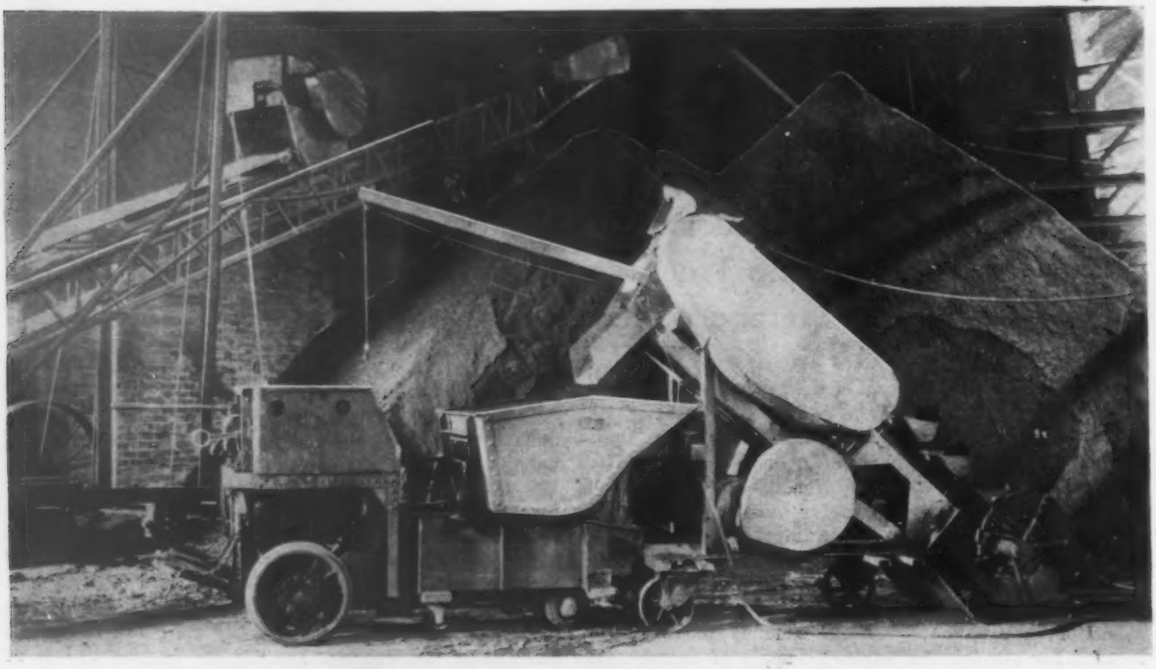
The abandonment of manual unloading came with the introduction of a portable 41-ft. conveyor in the northern part of the gallery. Sand is now passed by gravity directly from the car into the conveyor, which stacks it to a height of 17 ft. When a heap of sand

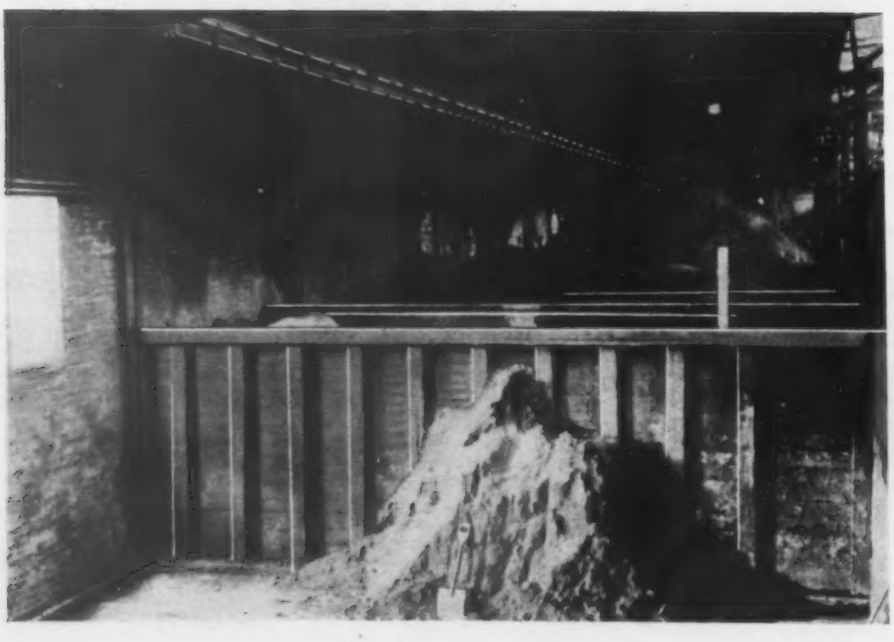


One of the 16-Ft. Belt Conveyors Used for Unloading Cars and Storing Sand in Bins

reaches up to its discharge end, the conveyor is advanced to the next unloading window. By this method the entire amount of sand stored in the gallery is stacked without employing any manual labor with the exception of one man who puts in part time on the conveyor, tending to the oiling and cleaning up around the machine while in operation.

veyor by trolley from a monorail. Whenever a carload of sand is spotted at this station, the conveyor is projected through a window and material is passed directly into the machine. The conveyor is easily moved along the monorail above the bins, as it stacks the available storage space to maximum capacity. This is all done without any additional rehandling.





Loader (Above) Coupled to Electric Truck at Molding Sand Station in the North End of Sand Storage Gallery

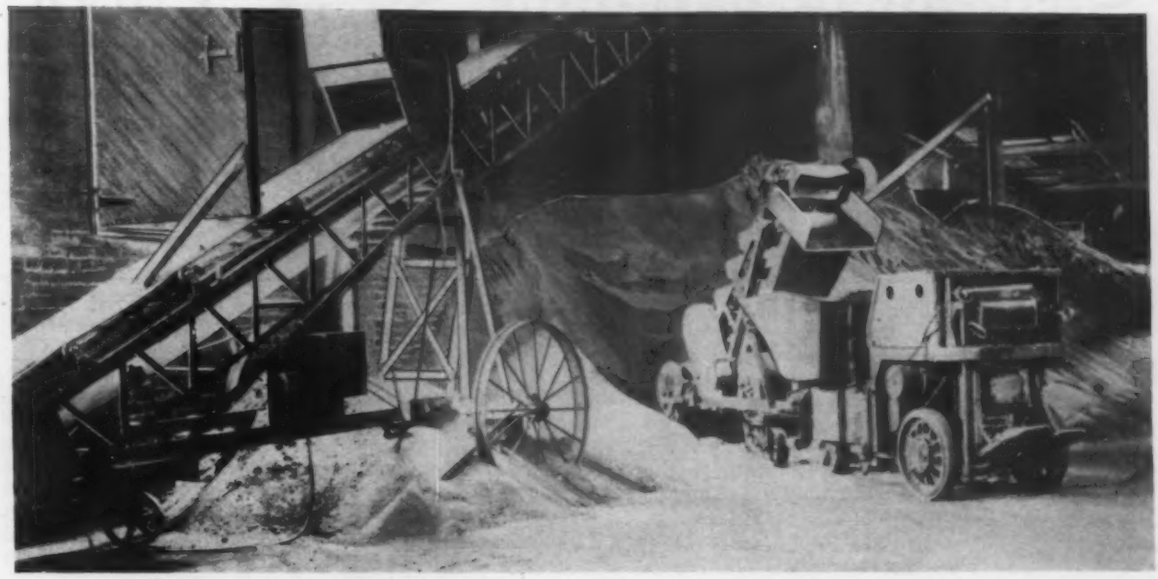
Sand Bins (Left) in the South Portion of the Storage Gallery, Showing 8-Ft. Dividing Walls and Overhead Monorail for Carrying Conveyor

At the station where the bank and black sand is stored, a 30-ft. portable conveyor is used. These two grades of sand are handled throughout the year. Whenever it is necessary to replenish the supply on hand, additional material is conveyed into the space available for storage.

At the south end of the gallery a 16-ft. conveyor is used. Because the sands stored in this section are kept separated in bins, it was necessary to suspend the con-

The elimination of over 95 per cent of sand rehandling labor costs through the use of conveyors has meant a large saving in terms of dollars. Over 26,000 tons of sand were handled last year and the cost of rehandling by manual methods was more than $9,000.

The original method employed in handling sand from storage to mixer was by the use of shovel and wheelbarrow. The wheelbarrow was dispensed with some time ago, and was replaced by an electric dump



Conveyor at the Bank and Black Sand Storage Pile. At the right is a sand loader coupled to an electric truck

truck made by the Elwell-Parker Electric Co., Cleveland. With this device, however, it was necessary to use two hoppers. As soon as one hopper was filled with sand by hand shoveling, it was carried away to the mixer by the electric truck and the second hopper was filled. The electric truck then returned the first hopper (now empty), and carried away the second. The use of the dump truck marked a great advance over the older method of handling sand, but later was supplemented by a device, designed by the Allis-Chalmers company, which entirely eliminated manual effort. This equipment, built by the Atlas Engineering Co., Milwaukee, consists of a bucket elevator which is driven by an electric motor, current for which is supplied by an extension cord and plug-in boxes located along the gallery columns. A guide projecting from the rear of the elevator fits into a coupling bracket mounted on the electric truck. The truck, when in proper position with the elevator, automatically couples to it. The loader is mounted on 10-in. castors, making it easy to move to any desired location. When placed in position for loading the nose of the elevator is forced into the sand by the motive power of the electric truck, whereupon the operator pulls the starting lever of a motor which drives the loader. The elevator is fed into the sand pile until the hopper on the truck has been loaded. The operator then pulls a release lever which uncouples the loader, leaving it there while he goes to the sand mixer and dumps his load.

Three loaders are at work in No. 1 foundry, one at the molding sand, one at the bank sand, and one at the used black sand. They are capable of loading 1 cu. yd. of sand per min. and have replaced four men who formerly were continuously engaged in shoveling the sand required for sand mixtures.

Sand Conveyor with Wheels Arranged So It Can Move in a Circle, Maintaining the Hopper End in Position at Receiving Window

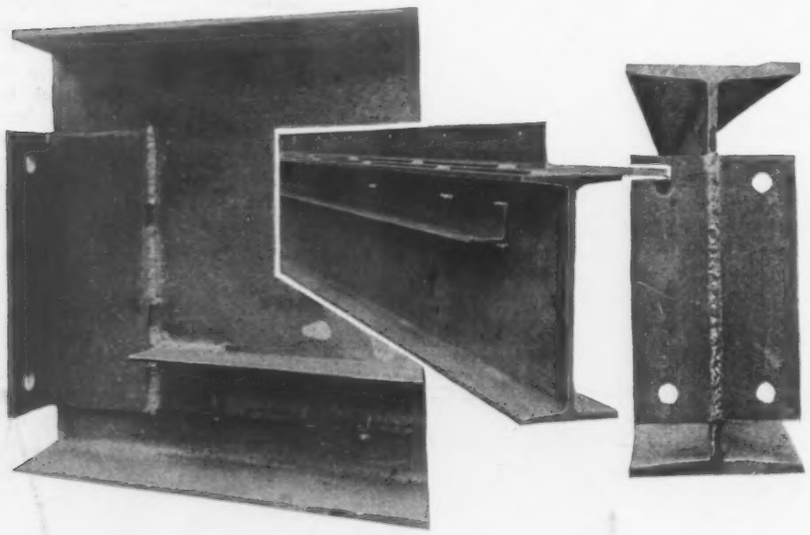
Structural Welding Saves Labor*

Arc Welding in Shop Fabrication Saves One-Fourth of Estimated Labor Costs—Field Welding Also Successful

BY R. A. STORM

CRANES for handling hot metal in a steel mill were first designed by Thomas F. Morgan and built by the Morgan Engineering Co., Alliance, Ohio. There are no riveted connections, to the writer's knowledge, where the rivets are subject to more severe treatment than are those in the girders of open-hearth charging machine cranes and soaking pit charging cranes. In fabricating girders for these cranes, it is physically impossible to make the rivet completely fill the rivet holes; shrinkage precludes this.

It is also impossible to heat the rivet and expose it to the air and prevent the oxidizing effect of free oxygen in the air on the rivet, after heating. To overcome these conditions, we investigated the possibility of driving the rivets cold, using a cold pressed rivet to avoid a scale formation. Having heard that one concern drove rivets cold, up to and including 3 inches in diameter, we secured information regarding machines and methods. We were told that it was necessary to anneal rivets up to and including ¾ in. and that above that size it was not necessary to anneal. We were much interested to learn why it was necessary to anneal a ¾-in. rivet and not a ⅞-in. The only evidence was experience. We then inquired of rivet machine manufacturers what style machines they built to perform this class of work, but were unable to locate a desirable type to perform this operation, as it was necessary to use a portable machine. We then decided to ream our rivet holes only 1/32 in. over-size, instead of the customary 1/16 in. as we believed that this would provide a better riveting condition. All the holes in crane girders for shop driven rivets are reamed 1/32 in. oversize in our fabricating shop, and by this method we find that we are able to increase the efficiency of our riveted connections. It was necessary to use a cold pressed rivet, as they seem to be more uniform in size. The rivets must not be over-size, as a ¾-in. rivet will expand almost 1/32 in. in heating.



(At Left) How End Connection Angles Were Welded. While the weld at the end was sufficient to carry the load, the weld at this point was necessary because of the angles

(Center) The Method of Welding Shelf Angles and Plates on the Bottom of Beams Which Carry the Brick Wall

(Right) How Angles Were Welded on the End of a Beam. One angle was placed on the beam, the other angle was welded in place, then the third bead was placed in this connection, joining the first two beads

Heavy Duty Machine Built

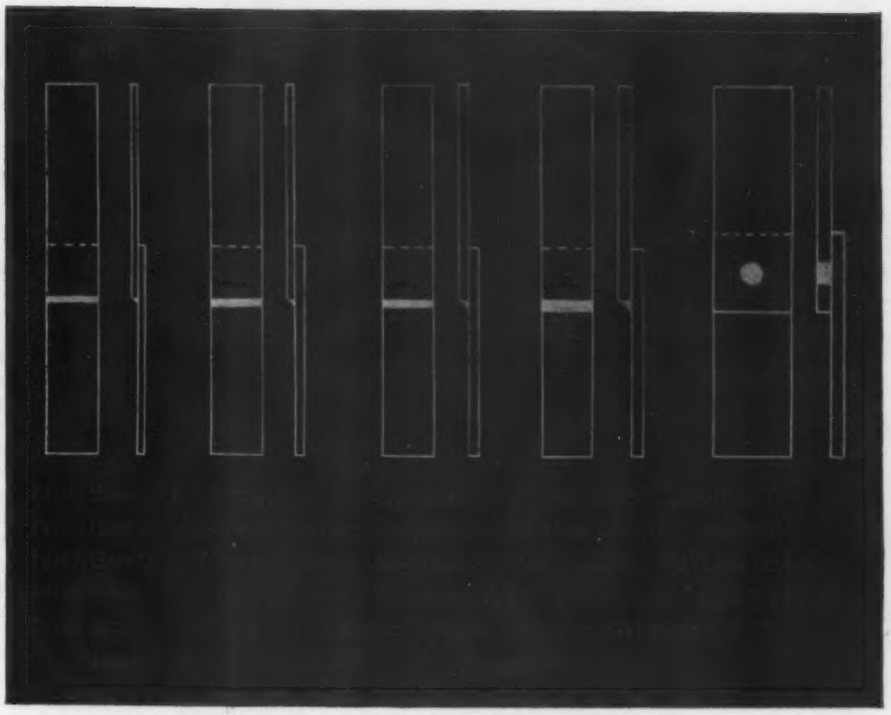
DURING the war the General Electric Co. was building a heavy duty spot welder at their Schenectady plant to weld plates up to and including 1 in. thick. Their difficulty was to provide electrodes to withstand the pressure required to bring in contact the metal which was necessary to perform the welding operation successfully. One heavy duty welding machine is said to have been shipped to Hog Island, but we have been unable to learn what service it gave.

During 1922, 1923 and 1924 we completely rebuilt over 600 locomotives for ten different railroads. We found that all railroads that had contracts with us permitted electric arc welding to be used in repairing the stayed parts of the boilers. We built up a large welding force to take care of our requirements in that line, and observed the efficiency of the electric arc welded joint in some of the sheet work in the fire boxes. In a number of cases the electric arc weld outlived the new sheets placed in the fire boxes when the locomotive had been overhauled. A great many fear the effects of impact and vibration on an electric weld. Many roads use this method successfully to repair broken locomotive frames, and it is hard to conceive a more severe test. This experience caused us to experiment and make tests on the electric welded joint to replace, where expedient, the riveted joint in fabricating structural steel buildings.

Overload Tests

REALIZING the inefficiency of the riveted connection where the rivet is placed in tension, such as plates on the bottom of spandrel beams, we made several test pieces and submitted them to an overload and determined that the electric arc weld was far stronger than the calculated strength of a rivet in tension. In replacing the rivet used in tension, we next planned to weld the shelf angles and connection angles. We again

*From a paper presented at the third annual convention of the American Institute of Steel Construction, White Sulphur Springs, West, Va., Nov. 11-14. The author is manager, structural department, Morgan Engineering Co., Alliance, Ohio.



What Was Shown by Tests Made to Determine the Amount of Weld Required to Compensate for Different Sized Rivets

conducted a series of tests, to determine the amount of weld required to compensate for the different sized rivets used.

The result of these tests is shown above. In all the tests there was no attempt made to favor the weld. The welded joints in this series of tests were subjected to a severe bending moment. They were subject to an eccentric pull, and the specimens having been lapped, would of necessity bend where lapped, when the force was applied. We compiled the following table from the result of these tests.

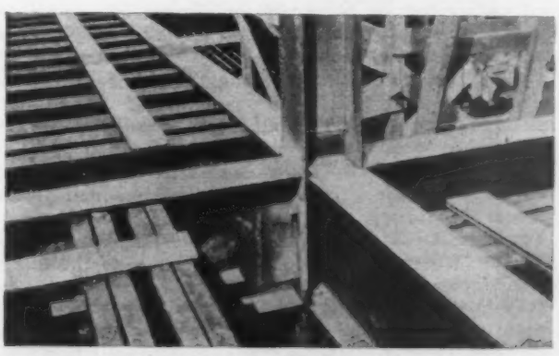
The equivalent strength in shear is as follows:

Rivet Diam., In.	Length of ¼ In. Bead, In.	Length of ⅜ In. Bead, In.	Length of ⅝ In. Bead, In.	Length of ½ In. Bead, In.
½	1½	1⅝	1¼	1⅛
⅝	2	1⅞	1⅝	1½
¾	2⅝	2⅛	2¼	1⅞
⅞	3⅛	2½	2⅞	2⅜
1	4¼	4	3½	3

One-half inch added to theoretical length of weld and rivet values figured at 10,000 lb. per sq. in.

Having consulted a number of structural engineers, acquainting them with the result of our tests, we decided that we were justified in adopting this method to replace the riveted joint when expedient to do so.

We then secured permission to completely electric



Will This Type of Arc Welded Column Connection Eventually Banish the Sound of the Riveting Machine?

weld an entire structure for which we had contracted. As we use the equipment manufactured by the Lincoln Electric Co., Cleveland, their electrical engineers offered several valuable suggestions on the welding of this building. The building is 100 by 150 ft. with two stories and basement. The outside beams on all four sides are wall bearing. There are three rows of columns, with five columns in each row, and with large beams connecting on all four sides of each column on the first and second floors and the roof.

No Rivets Used

THERE were no rivets used in the entire building. All shop and field connections were electric welded. The connections were punched with sufficient holes to erect the building and the bolts were not removed after erection. However, their value was not considerable in figuring the strength of the joints. A factor of safety of seven and eight was used on all column connections.

The columns were extended above the top of the beams and instead of using connecting angles where the roof beams frame into the web of the column, we welded the beams to the top of the column. This building was designed for riveted connections, and many of the connections would have been modified if sufficient time would have been available for redesigning.

The method of welding angles on the end of the beam was as follows: one angle was placed in the beam and welded to the web of the beam and the other angle was welded in place. We then had the third bead placed in this connection joining the first two beads. There are a number of ways to effect a savings in material and labor where a floor beam frames to the column. Where connecting angles are used, it is not so important that the beams be the exact length. Were we to substitute a plate for the angles, we could save material and the linear inches of weld, or, again, we might eliminate both the plate and the angles and cut beams to the exact length, and weld directly to column. This type of construction would necessitate the use of shelf angles welded on the columns with holes in the horizontal leg of angles and holes to match in the bottom of the flange of beams.

Large Savings in Labor

THE savings which could be effected with this method of fabricating would depend upon your shop equipment and your individual ingenuity. On the building in Canton we were able to save approximately 25 per cent in our estimated shop labor. This saving could, no doubt, be increased eventually when quicker methods of assembling our materials are devised.

When these beams were welded we had three blocks of wood notched out to fit over the flange of the beams and the outstanding leg of the shelf angle. This obviated the work of a fitter for this operation. We then

placed the beam on the top of the plate and the services of a fitter were unnecessary for this operation.

Our shop was equipped primarily to build crane girders and miscellaneous structural parts for a crane, and it is possibly not as efficient on a straight beam and column fabricated job as most structural shops.

It will no doubt be possible to reduce the size of some sections used in fabricating certain types of steel structures, as there will be no reduction of area in the welded joint. We decided to proceed with caution along this line, as it is possible to become too enthusiastic. On the building in Canton there were 780 field welds, or 358 ft., an average of 5½ in. to the weld. One welder was 120 hours performing the work. We used 110 k.w. hrs. for the field welding. When an operator is laying a continuous bead on straight work he can average from 10 to 12 ft. per hour, with a ⅜ in. bead. The actual field welding time on this building was possibly 25 per cent of the total time. It is hardly possible, however, to use the linear feet welded per hour to estimate costs, as our costs will depend largely upon the type of joint, form of weld and the size of the bead.

One of the principal objections to this type of construction seems to be that there is no method of determining the efficiency of a welded joint without destruction. Is this not in a way true of the riveted joint? Does the hammer test conclusively prove that a rivet is not defective?

When most of us think of a weld there comes to our mind the uncertainties of a forge weld, or possibly we have had some of our automobile parts welded at the alley garage by an inefficient operator. A fusion weld is not nearly so indeterminate as the forge weld. A competent operator can always tell when he has an effectual weld. In considering the efficiency of a welded joint, the individual is a very important factor, and we should endeavor to maintain a very high standard among our operators. We exercise extreme care in the selection of our operators and test to destruction certain welds of each operator weekly.

Simple Test Methods

A VERY simple method of testing welds is to have test pieces made from two bars, bevel one end of each bar to 30 deg., butt parallel bevel end of bars and weld. Break these test pieces in the weld with a sledge or by bending in a "V" block in a press. An examination will then disclose the efficiency of the operator. It is well, however, to have standard test pieces made occasionally and pull in a standard tensile testing machine.

In order that the electric welding of steel structures may be guided along safe lines, structural engineers should give careful attention to the design and use a high factor of safety in the welded joint. Some method should be determined that will protect the purchaser, and a fabricator who has no knowledge of the art and possibly has an inefficient operator should not be permitted to fabricate a steel structure with this method until he can submit certain certified test specimens that test up to the required standards, as one single failure with this method of construction would create an obstacle that would retard our progress considerably.

Government Costs More Than Food

While Federal Taxes Have Been Going Down, State and Local Taxes Have Been Going Up

THE per capita cost of government today exceeds the per capita cost of food for all the country. So stated W. J. Thompson, former chairman of the executive committee of the National Grange, before the national economy and tax reduction conference held in New York last week in conjunction with the annual convention of the National Founders Association.

"Taking 15 of the leading cities, the Census Bureau shows the average per capita cost of government in 1922 to be $118 while the figures of the Department of Agriculture show that in the same year in the same cities the average cost of food was only $95."

It was to devise a plan for stemming the rising tide of national, State and local taxes that the conference was called of representatives of agriculture, industry and transportation in connection with the movement for "Better Understanding Between Industry and Agriculture" started by the association a year ago.

William H. Barr, Buffalo, president of the National Founders Association, outlined the purpose of the conference in these words: "Our purpose is to begin an educational process which will ultimately be carried to the State Legislatures and to the town councils, urging that taxation be made national and scientific. This is not the discouraging problem that it might appear. During the past six years citizens in Ohio have been working out the State's financial salvation in the direction of administrative costs and debt solutions," by means of just such an organization as was suggested at the conference.

The Ohio Plan

WHAT has been done in Ohio was described by C. A. Dyer of the Ohio Farm Bureau Federation and the Ohio State Grange and chairman of the executive committee of the joint conference for Better Understanding Between Industry and Agriculture. "During the past six years," he said, "Ohio has been working out its financial salvation in the direction of administrative costs and State and local taxation. This is being done through organization and cooperation.

"The tax and debt situation became so bad in the State that it was finally decided to call representatives of all Ohio interests together to see if something could not be agreed upon. After an all-day session, a temporary tax relief plan and permanent solution of the debt problem were worked out. A committee, representative of the great industries, was selected to draw up laws in accordance with the conference agreement.

"The debt control law framed by this committee was taken to the Legislature by a large group of representatives of all the tax paying interests of the State. It was passed by both houses of the General Assembly. This debt law is perhaps the most drastic in the United States, and has been improved upon at each succeeding legislative session. Its chief provisions are, first, that no money can be borrowed for current operating expenses, and a current operating expense is defined as an expenditure of money for something that has a life of less than five years; second, that no bond can be issued for longer than the probable life of the improvement purchased, and that all bonds must be serial and paid when due."

"The Federal Government is steadily reducing its tax burden upon the citizen and the business man," said James A. Emery, general counsel of the National Founders Association. "But even as this is occurring, we are confronted with the steady rise of State and local taxes. Nor can we fail to consider the two, for they comprise the citizens whole burden. For 1924, some $10,000,000,000 will represent the total expenditures of Federal, State and local government. Of this, probably $8,500,000,000 is raised by direct taxation, while the remainder is borrowed and spent, to be covered by deferred taxation. Of the annual tax levy, the States and their subdivisions required for 1924 substantially $5,000,000,000 of taxes, while the Federal Government has reduced its demands to little more than $3,000,000,000.

(*Concluded on page* 1490)

Says Foundry Gets Labor Leftovers

National Founders' Association Urged to Get Behind More Practical Educational System

SPEAKING before 250 members of the National Founders Association at the twenty-ninth annual convention in the Hotel Astor, New York, Nov. 19, L. A. Hartley, the association's director of education, made the charge that our present school system produces an unnecessarily large number of social misfits, furnishes a fertile field for cultivation by self-interested agitators and results in an enormous annual economic waste as a result of idleness and incapacity of graduates.

Our school system is based, he said, on the principle of producing individuals with a certain amount of learning, but with little ability and in many cases with little desire for earning. The remedy, according to Mr. Hartley, is getting back to first principles and teaching more about work. The boy who leaves high school with a smattering of French and Latin, a little algebra and physiology, is hardly prepared to earn his living in a world where information, to be salable, must be immediately useful. He finds it hard to get a satisfactory job, shifts from one to another rapidly, is idle much of the time, becomes disgruntled with a system of things that makes it impossible for him to get good wages until he has spent a long preparatory period in a shop and is likely to become a social misfit, susceptible to all sorts of radical and distorted influences.

This need not be the case, said Mr. Hartley. High schools and colleges might well include practical training courses which would prepare a boy for immediate useful employment. Many such courses are now in use, but they have been up to this time confined to other lines than those of the foundry.

The result is that it is almost impossible for a boy to get any practical foundry training unless he goes to work on the floor. Furthermore, when he leaves school, he finds it easier to apply the information at his command to some other line of work and usually turns to the foundry for employment only when most other lines have failed him. In this way the foundry gets the labor "culls."

Proper training courses in foundry work, carried on in foundries at the same time and in connection with, regular school work, would combine the advantages of the present educational system with a good livelihood for the graduate. Such methods are in use in some centers. In other cities, the individual foundries have inaugurated apprentice training courses which are supplying the needed skilled labor in those localities. The Milwaukee methods have been described in a series of articles recently published in THE IRON AGE. Other such systems are at work in Providence, R. I., Pittsburgh, Wilmington, Del., and modifications of the employer-training method are in use in many other cities.

Technical Schools Should Help

BUT the success of these individual attempts to correct the shortage of skilled foundry labor do not excuse the schools for their lack of regard for the material welfare of the graduate. Particularly should the technical and practical engineering schools, many of which are heavily endowed, undertake to prepare the boy for his future work. Mr. Hartley suggested that foundrymen present at the convention consult with local school superintendents with the purpose of arranging corollary courses in high schools and in the foundries. Graduates would be entitled to positions in the shops at definite wages. Thus the boy would receive his usual education, minus a few classical courses perhaps, and in addition, be ready to earn good wages immediately upon leaving school.

So far as the present apprentice training systems are concerned, Mr. Hartley pointed out that the development of a system to meet local conditions is more likely to be successful than the transplanting of a method which may have worked out well in other localities. He also stressed the importance of and progress being made in better foreman training.

The report on Industrial Education, prepared by Chairman L. W. Olson, Ohio Brass Co., Mansfield, Ohio, and read by A. E. McClintock, commissioner National Founders Association, recorded much real progress in apprentice and foreman training in the past year. The report of Commissioner McClintock emphasized the freedom from labor troubles during the past year and noted that no vigorous attempts are being made to organize the foundries of members. "Heavy work foundries which have had dull business for the past four or five years, are beginning to experience an improvement in trade," he said. "The increase in tonnage has been gradual but quite steady."

In discussing the progress made in promoting employer-foreman relations, the report said, "Greater effort than ever before is being made by employers to explain to foremen and company organizations the economics of business, the financial problems and the management problems confronting the company. . . . On every side can be found increasing evidence that management is assuming the leadership of its workmen and in return the individual worker is manifesting more than a payroll interest in his job."

Labor Saving Devices

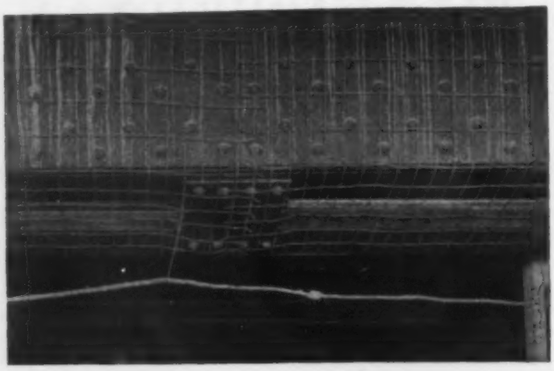
H. M. LANE, president H. M. Lane Co., Detroit, gave an illustrated talk on "The Need for Improved Foundry Methods to Overcome Foundry Labor Shortage." The outstanding need in the modern foundry, according to Mr. Lane, is to get more work per man-hour out of available equipment.

There is, of course, a happy medium between too much and too little equipment in order to achieve this maximum production per man-hour. It settles down to a question of the overhead which can be carried on the volume of business which is done by the foundry using the equipment. Local conditions will also affect the choice of equipment. He pointed out that a close coordination between sand handling and mold carrier systems is necessary for profitable results, especially in those shops which have expensive mold carrying conveyors.

Pictures of sand-slingers, carriers such as those used in the Ford, Crane and American Radiator foundries, and special conveyors for particular requirements were shown and their operation described. One problem which should be considered in the installation of a conveyor is the amount of repairing which will have to be done to keep the apparatus in good working order. On one installation of a so-called "question-mark" conveyor, he had found that it was necessary to keep 1.6 millwrights busy on the equipment all the time; this is, naturally, a factor to be considered.

Urge Repeal of Mining Restrictions

THE present "intolerable situation in the anthracite industry" is largely due to the miners license law of the State of Pennsylvania and the failure of that State to take steps to make effective the principles of the anthracite award of 1903, said a resolution presented by the committee on resolutions at the Thursday session. The resolution charged that "The anthracite field is entirely within the boundaries of Pennsylvania. The situation therein which excites the anxiety of the



Cement Coating Protects Steel from Destructive Corrosion of Liquids and Gases

AT the left is shown the corrosive action of abbatoir refuse upon the structural steel beams which support the structure. Portland cement, properly applied, acts as a check to such corrosion. Gunite, a form of concrete produced by projecting the mixture against the surface to be coated at high velocity, insures close adhesion because it removes the film of entrained air always present when hand poured mixtures are used. Above is shown the mesh on which the gunite is shot against the beam to be coated. The mesh is placed ⅜ to ¾ in. from the surface of the steel.

nation is wholly within the control of that State. Its failure or refusal to control it appropriately fortifies those who run to Washington in every local crisis which it is the business of the State to meet. Pennsylvania is, therefore, facing a challenge to the quality of its citizenship and the efficiency of local self-government." The resolution closed with an appeal to its Pennsylvania members to make every effort to secure the repeal or modification of the miners license law and the recognition and enforcement of the principles of the anthracite award of 1903.

At the annual banquet, held Wednesday evening, Nov. 18, more than 200 members and guests heard Donald Malloch, poet and author, discourse on "Some Sinners I Have Met."

Officers for the coming year were elected as follows: President, William H. Barr, Buffalo; vice-president, L. R. Clausen, J. I. Case Plow Works Co., Racine, Wis.; secretary, J. M. Taylor, Chicago, treasurer Chicago Trust Co. Commissioner A. E. McClintock, Chicago, was reappointed.

District committees were appointed as follows:

First.—Robert E. Newcomb, Deane Works, Worthington Pump & Machinery Corporation, Holyoke, Mass.; Walter Perry, Farrel Foundry & Machine Co., Ansonia, Conn.; Nelson J. Darling, General Electric Co., West Lynn, Mass.; Alfred E. Hammer, Malleable Iron Fittings Co., Branford, Conn.; H. L. Stevens, Rhode Island Malleable Iron Works, Hillsgrove, R. I.

Second.—Frank Myers, Poughkeepsie Foundry & Machine Co., Poughkeepsie, N. Y.; D. F. O'Brien, A. P. Smith Mfg. Co., East Orange, N. J.; C. W. Noble, Noble & Wood Machine Co., Hoosick Falls, N. Y.; T. H. Pickering, J. Anstice & Co., Rochester; W. B. Smith, Smith & Caffrey Co., Syracuse.

Third.—Frank J. Eppele, Trenton Malleable Iron Co., Trenton, N. J.; C. S. Koch, Fort Pitt Steel Casting Co., McKeesport, Pa.; Thomas W. Pangborn, Pangborn Corporation, Hagerstown, Md.; C. H. Hoffstetter, Odin Stove Mfg. Co., Erie, Pa.; T. B. Wood, T. B. Wood Sons Co., Chambersburg, Pa.

Fourth.—S. W. Utley, Detroit Steel Casting Co., Detroit; R. J. Redmond, Buckeye Foundry Co., Cincinnati; J. Edgar Lee, Challenge Machinery Co., Grand Haven, Mich.; William D. Hamerstadt, Rockwood Mfg. Co., Indianapolis; W. L. Sealbach, Walworth Run Foundry Co., Cleveland.

Fifth.—H. E. Muchnic, Locomotive Finished Material Co., Atchison, Kan.; H. N. Strait, H. N. Strait Mfg. Co., Kansas City, Kan.; Warren G. Jones, W. A. Jones Foundry & Machine Co., Chicago; Walter R. Medart, Medart Co., St. Louis; C. N. Stone, Deere & Co., Moline, Ill.

Sixth.—M. H. Pettis, Simmons Co., Kenosha, Wis.; Frederic Crosby, American Hoist & Derrick Co., St. Paul; Emil Vilter, Vilter Mfg. Co., Milwaukee; F. H. Clausen, Van Brunt Mfg. Co., Horicon, Wis.; R. P. Tell, National Brake & Electric Co., Milwaukee.

Seventh.—W. A. Griswold, Gray & Dudley Co., Nashville, Tenn.; W. C. Grout, Lufkin Foundry & Machine Co., Lufkin, Tex.; Ward Delaney, W. K. Henderson Iron Works & Supply Co., Shreveport, La.; W. F. Tynes, Hardie-Tynes Mfg. Co., Birmingham; W. D. Moore, American Cast Iron Pipe Co., Birmingham.

Honorary Member of Administrative Council: C. P. Briggs, Minneapolis, Minn.

Industrial Safety Congress at Syracuse

The ninth annual industrial safety congress and exhibit to be held under the auspices of the New York State Department of Labor will take place at Syracuse, N. Y., Nov. 30 to Dec. 3. The sessions of the congress will start in the Mizpah auditorium Dec. 1, and the safety exhibit will open Nov. 30 at the Onondaga Hotel. In a session on plant safety education Dec. 2, C. L. Peake, director industrial relations American Radiator Co., Buffalo, will speak on "How the Cooperative Plan Helps an Individual Plant." R. P. Heald, safety inspector Ford Motor Co., Green Island, N. Y., is also on the program for that day and will discuss "Introducing the New Man to the Job."

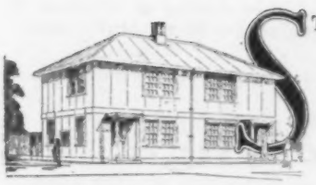
To Hold Conference on Industrial Cleaning

Seventy men "who take care of the cleaning needs of 18,000 manufacturing plants in many industries" will meet in New York, Dec. 7 to 10, at the Oakley Chemical Co.'s ninth annual conference. Among the papers that will be read, 16 are on technical subjects covering the petroleum, baking, textile, railroad, automotive, laundry, dairy, power plant, paper, and other industries.

More Steel for Homes and Farms*

Advantages of Steel for Frames and Lath Make Its Increasing Use for Residential and Farm Construction Certain

BY HENRY R. BRIGHAM



STEEL is not playing the part that it could or should in the construction of residences, apartment houses, garages and farm buildings.

Residential construction offers a large and almost untouched field for expansion of the steel industry, and the industry has much to offer in the way of greater permanence, strength and reduced fire hazard. The customs of centuries, however, are not overcome without effort. It is up to the steel industry to arrange for the fabrication of steel for such purposes in designs that can be more easily and quickly handled and erected than wooden beams and girders and at less cost, and to arrange for its distribution in smaller unit shipments.

The question is whether the prospect of increased business is bright enough to be worthy of the effort at the present time. There is no use discussing large apartment houses, for the value of use of structural steel in large buildings has been adequately proved and is being adopted. The problem is to obtain greater use of steel in small apartment houses, residences, farm buildings and small garages.

The total value of building construction this year will be over $5,000,000,000, of which about 44 per cent will be in residential construction. It is safe to say that steel was a negligible factor in the greater part of that residential construction, whereas it doubtless could have been substituted to advantage for lumber in the framework and as floor joists. Making a conservative estimate there was probably $200,000,000 spent for lumber that might have been spent for steel.

The Building Age and National Builder predicts that the building boom will last several years and, if so, isn't a possible annual business of even half that amount, or 100 millions of dollars, worth fighting for?

The annual fire losses of this country are over $535,000,000 a year. In one year 162,427 frame houses, 37,531 brick houses and 282 fireproof burned.

Steel frames and floor joists alone will not help much in preventing fires, but if costs can be made low enough steel can be combined with concrete, gypsum, asbestos or other mineral compositions, making fireproof floors and protecting the steel from corrosion.

The Question of Cost

ONE objection to the greater use of structural steel in residences, garages and farm buildings is the cost, but it is based on wrong premises and could be wiped out by a campaign of education and practical demonstrations.

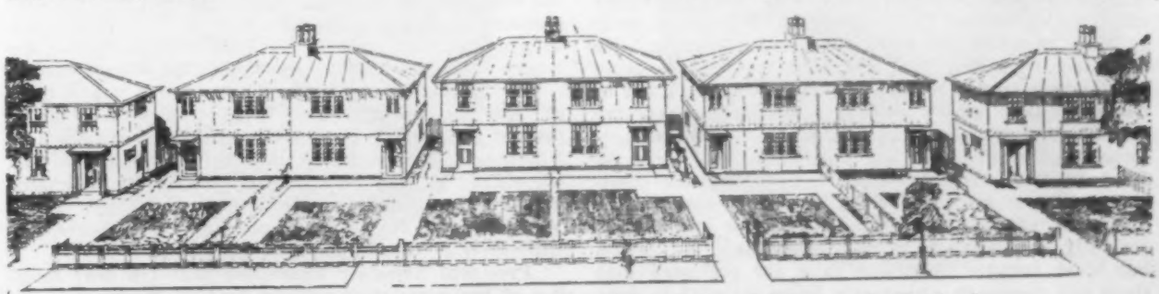
Even if a steel joist of a certain length costs more delivered than a wooden joist of the same length suitable for the same use, it does not necessarily mean that the final cost of erection of the building is going to be more. The greater strength and rigidity that can be obtained in the steel joist make it possible to reduce the number of joists and to lessen the necessary number of supports. This may result not only in the use of less feet of joists, but in simplifying the entire structure so that a considerable excess of cost per running foot of steel over lumber might not result in any greater final cost for the material for a building. Then, further, it is very possible, if the structural steel is cut to measure and delivered ready simply to be bolted or riveted in place, that with proper appliances for its erection time can be saved, as it is saved in the erection of skyscrapers, and labor costs can be reduced.

If in the end a saving can be shown both in material and labor costs by use of structural steel instead of lumber, that saving will appreciably help to make it possible for the builder to use the necessary materials such as concrete to protect the steel and make a fireproof and strong building as cheap, if not cheaper, than a building with a wooden frame which is not fireproof and which may be of shoddy construction without the innocent purchaser being able to detect the difference.

Cheaper Than Wood

THAT this is not an idle dream has been proved by one builder, who is profitably building small houses to sell, using steel frames and metal lath, finishing the exterior with stucco or brick. In itemizing the cost of a stucco exterior steel frame bungalow, size 24 ft. x 34 ft., with five rooms and bath, he says: "The cost for the metal lumber and metal lath for the building complete is $522.72, which will figure about $75 less than the wood joists, rafters, studs and lath for exterior and interior walls. The reason for this is that the steel in the frame is spaced on 2-ft. centers, whereas the studs in the wood house are spaced on 16-in. centers; thus a saving in steel is effected. The erection costs run less, as laborers are hired at a cost of 60c. an hour, instead of carpenters at $1 an hour. The lath is installed by men at 70c. per hour, against $1.35 per hour for wood lath." He uses 4-in. steel channels for all his framework and 6-in. floor joists and they are delivered to the building site cut to length. He punches the necessary holes, claiming that he can do so cheaper than he can get them cut by the manufacturer. He says that "When it becomes known by the steel concerns of this country that the steel-frame fireproof house can be built at no greater cost than wood they will also find that producing steel members for house construction will greatly increase their tonnage output."

*From a paper presented at the third annual convention of the American Institute of Steel Construction at White Sulphur Springs, W. Va., Nov. 11 to 14. The author is chairman, Housing Committee, National Association of Real Estate Boards, Boston.



A Row of Telford All-Steel Houses as Erected in Industrial Centers in England

So far reference has been made only to more use of steel in the framework. The metal lath business is growing fast and needs no comment except that if you have steel floor joists you can use metal lath and concrete in making fireproof floors. But it may be possible to extend the use of steel even further by using sheet steel for walls, as has been done in England. There, some of the frames are made of wood and the walls of steel, but the frame being incased the buildings are practically fireproof. There is still some doubt as to whether those buildings are a success, which is due partly to that enemy of steel—rust—and partly to problems of insulation, both of which are illustrated in this country in the small steel garages which are now on the market. After the steel manufacturers in this country succeed in satisfactorily replacing wood in the framework of small building construction it might be possible to extend their activities to more use of steel in the walls when the problems of corrosion have been better solved.

Meanwhile the substitution of structural steel for lumber in the framework of residences, apartments, garages and farm buildings in combination with fireproof materials to decrease fire losses, to preserve our forests and timber supply, as protection against earthquakes and tornadoes and to keep out rats and vermin, is a large enough prospect to be worthy of attention to those engaged in the manufacture of structural steel.

Life of Blast Furnace Linings

Changes in Operating Conditions Lengthen Use, Says M. C. Booze at Southern Ohio Pig Iron Association Meeting

THAT the annual capacity of a blast furnace is dependent upon the life of the fire brick lining of the furnace and that there are so many factors entering into the determination of the latter that no accurate standard can be established, were conclusions reached by members attending the business session of the Southern Ohio Pig Iron and Coke Association in the office building of the American Rolling Mill Co., Ashland, Ky., Nov. 18.

Discussion centered about the setting up of a formula whereby the producing capacity of furnaces can be determined on an annual basis, as the American Iron and Steel Institute and the business papers have suggested. It was stated that the way in which a furnace is blown in and the method of operating it are influences which must be taken into consideration. The members decided to refer the question to the furnace rating committee for detailed study and acknowledged that the subject was too important to be decided hastily in a short business meeting.

Extending Life of Blast Furnace Lining

Manufacturers of fire brick are bending every effort to maintain a high standard of quality and their products today are of better material and greater uniformity than has been the case in the past, according to M. C. Booze, Mellon Institute, Pittsburgh, who read a paper on "Refractories for Blast Furnace and Coke Ovens." He pointed out that information given by blast furnace operators indicates that an extension in the life of the furnace lining can be obtained by suitably altering the furnace design or operating conditions. In answer to a questionnaire sent out by R. M. Howe, one operator showed increasing tonnages on new linings installed in each of three furnaces. Rating the tonnage obtained with the first lining in one furnace as 100 per cent, the second gave 119 per cent, the third 117 per cent and the fourth 222 per cent. On a second furnace, basing the tonnage obtained with the first lining at 100 per cent, the second gave 145 per cent, the third 139 per cent and the fourth 209 per cent. These increases were brought out largely through changes in operating conditions.

Mr. Booze referred to the demand which has risen within the past few years, for brick with extremely small variations and the progress which has been made in that direction by refractory manufacturers. He emphasized the fact that fire brick makers are using clays which are the purest obtainable and which are at the same time usable without resorting to expensive manufacturing methods. The best flint clays are selected, and while there are other materials more refractory, they are either costly or require such treatment as would greatly increase the cost of the product.

Other materials of higher cost could be utilized successfully for adding to refractoriness, said Mr. Booze, but blast furnace operators have not indicated that these are necessary, apparently being satisfied to meet the problem by the liberal use of cooling plates. Aside from the furnace operating conditions, the kind of ore and the coke used, the rate of abrasion will be affected by the hardness of the refractory, the strength with which it is bonded together and the size of the individual grains and pores. The limit in actual hardness for clays is probably closely approached by many of the products now supplied for blast furnace inwalls and tops.

American Silica Brick an Achievement

The development of the manufacture of silica brick used in the construction of coke ovens is distinctly an American achievement, said Mr. Booze, and in this line the refractory industry of the United States is far in advance of foreign countries. The red or brownish spots that are frequently found on silica brick can be removed by reburning under proper atmospheric conditions and bricks spotted in this way may be as high in quality as any others. Such discoloration should not cause concern.

Ralph H. Sweetser, president of the association, presided at the afternoon session and announced the appointment of the following committees:

Coal evaluation committee: D. J. Demorest, chairman; George M. Coughlin, Thomas DeVenny, E. G. Bailey, L. R. Forrest, E. A. Hitchcock, J. H. Briscoe and John Teegarden.

Furnace rating committee: Charles R. Peebles, chairman; J. S. Ferguson, Karl Steinbucher and H. A. Berg.

Membership committee: E. Brokenshire, chairman; Robert Tynes.

Standards committee: C. J. Rice, chairman; E. M. Weinfurtner, C. L. Bransford.

Sampling and analysis committee: W. P. Daines, chairman; H. K. Bourne, H. E. Nold.

Accident prevention committee: W. G. Hoagland, chairman; J. E. Purtell, H. E. Cook.

Ohio River Canal Project Urged

Support of the program of the Ohio Valley Improvement Association for the completion of the canalization of the Ohio River by 1929 was urged by W. C. Culkins, secretary of that organization, at the dinner meeting at the Bellefonte Country Club. Mr. Culkins stated that in 1924 more than 10,000,000 tons of goods valued at $128,000,000 were transported on the Ohio and that steel companies in the Pittsburgh district were pioneers in utilizing the river for moving their products to Western markets. Donald Putnam, former secretary of the association, presided at the dinner session.

Several refractory men and geologists were guests at both the afternoon and evening meetings. Those present included G. G. Coolidge, Harbison-Walker Co., Pittsburgh; John P. Bankson, General Refractories Co., Cleveland; G. P. Dovel, J. P. Dovel, Birmingham; W. R. Jillson, state geologist, Frankfort, Ky.; O. C. VonSchlichten, G. M. Enos and Charles H. Behre, Jr., University of Cincinnati, Cincinnati.

President Sweetser announced that the next meeting of the association will be held in Ashland in the latter part of January.

Improvements in Automotive Steels

Determining Fatigue Values by Fractures—Variations in Grain Size—Fine Grained Steels Better

BY WALTER G. HILDORF

This is the conclusion of an article on the same subject published in THE IRON AGE, *Nov. 19. The author is metallurgist, Reo Motor Car Co., Lansing, Mich.*

Fracture Testing of Steel

Steel makers have fractured steel for many years for the purpose of judging the condition or quality of the steel from the appearance of the freshly broken surface. However, most of this has been done to aid in the manufacture of the steel. No one seems to have tried to connect the appearance of the broken bars with their impact or fatigue properties. It is well known that it is possible to easily obtain the usual physical properties such as tensile strength, elastic limit, reduction of area and elongation. This is because the steel companies and the automotive metallurgists have cooperated to solve the problem.

However, automotive parts are subjected to impact and fatigue, two properties about which very little is known. If a careful inspection is made of parts that have failed in service, such as axle shafts, I believe the fractures of these parts will show considerable light upon their impact and fatigue values. Such an inspection was made at our plant and, for a period of nearly three years, we have used steel which meets this fracture test, with gratifying results.

There is no generally accepted fatigue machine which can be depended upon to give results which would be comparable to those obtained in service. Our most reliable fatigue machine has been the over-loaded Reo Speedwagon. To explain this method of inspection the routine followed for axle shaft material, which is S. A. E. 3140, is as follows:

> Three bars, 9 in. long, are taken from each heat of steel. They are heated to 1550 deg. Fahr. in an electric furnace, held at heat for 1½ hr. and cooled in the air. Then they are heated to 1425 deg. Fahr. in the same or a similar furnace, held at heat for 1½ hr. and furnace cooled. When they have cooled to room

Fig. 11 (Left)—Fully Silky Fibrous Fracture

Fig. 12 (Right)—Fracture Showing Crystalline Structure

Fig. 13 (Lower Left) — Fracture Showing Reedy or Woody Structure

Fig. 14 (Lower Right)—Fracture Showing a Large Flake at (X)

temperature, they are notched at the center. This notch is made by cutting the bar about one-third off with a hack saw. The bars are broken in a press by placing the bar notch down on two V-blocks which support it at the ends. A narrow block is placed on the bar opposite the notch. Pressure is slowly applied to this block until the bar is broken.

The desired fracture is shown in Fig. 11 and is called fully silky fibrous. A bar with this kind of fracture is very tough and seems to be of equal strength over the whole cross-section, because the threads or fibers of the steel break together without causing cracks or bursts in the bar.

The fracture of a very brittle bar is shown in Fig. 12. This we have called a crystalline fracture. It is probably the most dangerous structure that can be put into an automotive part which must resist shock and fatigue. This structure is often found in the regular run of S. A. E. 3140 as well as several others, if not all steels. The ordinary heat treatment will not make these steels tough. The treatments given to these

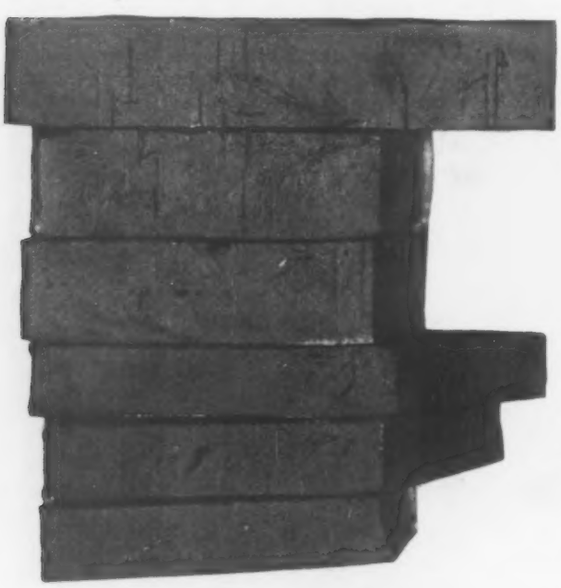


Fig. 15—Hardened Disks of S.A.E. 3140 Steel, Fractured to Show Dirt Inclusions

steels, usually electric, should have caused the bar to break with a tough fracture, provided it would respond to heat treatment and become tough. However, it was found necessary to quench from 1800 deg. Fahr., followed by a quench from 1475 deg. and furnace cooled from 1475 deg., to make it break with a tough fracture. Such material as this is not safe to use for highly stressed parts, because even when it broke with a tough fracture it was very weak in comparison with a bar such as shown in Fig. 11.

A very interesting thing in this connection is that occasionally a heat of steel will be found which will give a crystalline fracture if cooled to around 30 deg. Fahr. and a silky fibrous fracture at 100 deg. Fahr. This probably can be explained by the fact that the steel companies in their regular practice make all grades from that which will be fully fibrous under practically all conditions to the badly crystalline which it is nearly impossible to change. The case just mentioned no doubt is one that comes about midway between the two extremes.

Reedy or Woody Fractures

Another fracture which is often found is shown in Fig. 13. We have called this reedy or woody. The tears or bursts vary decidedly in different samples, from a few very minute cracks to those shown. Some of them are no doubt caused by dirt or laminated structure. However, this does not account for all of them. At present there does not seem to be any satisfactory explanation for them. Yet it seems reasonable to believe that, where these tears or cracks take place and the metal pulls out and apart, there is not uniform strength across the whole section. Therefore, its impact and fatigue value should be lower than that of a fully fibrous bar. This has been fairly well substantiated by road tests and laboratory impact tests.

Occasionally flakes are found as shown in Fig. 14. These are believed to be a source of internal weakness, decreasing the fatigue value of the bar.

An attempt was made by hardening and fracturing

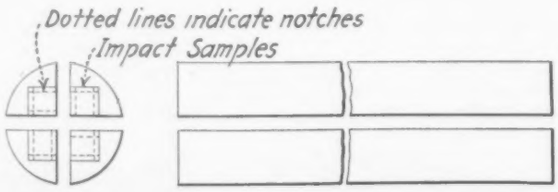


Fig. 16—Showing Method of Cutting Samples from the Bar and the Position of the Notches

disks to connect the reedy or woody fractures with non-metallic inclusions or dirt. The disks were supported around the outside and broken by applying pressure to a ball located at the center. Some of the broken disks are shown in Fig. 15. Reeds do occur at the "stringers" or inclusions shown, but we often found reeds without any apparent inclusions to cause them. We did find, however, that this method of breaking disks was as reliable, if not more reliable, than the microscope for locating non-metallic inclusions.

A large number of samples have been examined under the microscope in an attempt to find something which would differentiate between the various fractures such as fully fibrous, crystalline, and reedy or woody. So far, nothing has been found which could be depended upon to separate them. Possibly the main reason for this is that they all go back to, or are dependent upon, the conditions under which primary crystallization took place.

When a comparison is made of bars having fractures as above mentioned and all of the same Brinell hardness, it is found that they all machine alike except the crystalline bar which machines much harder. On such operations as milling splines or keyways, diffi-

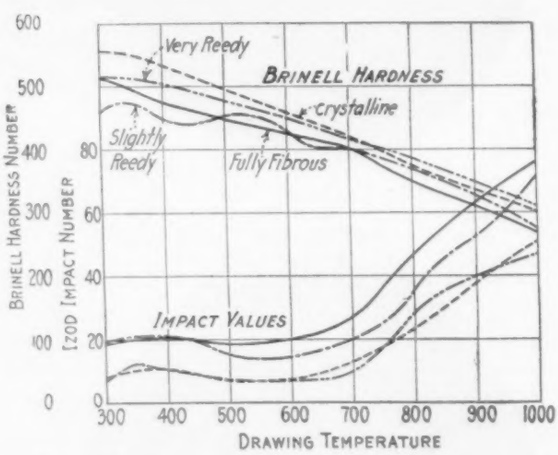


Fig. 17—Showing Impact Values and Brinell Hardness with Various Drawing Temperatures. This series of tests was conducted by J. W. Percy of the Michigan State College Experiment Station

culty will be encountered in maintaining size if the limits are close and the stock is mixed.

Impact Values and Fractures

J. W. Percy of the Michigan State College Experiment Station ran a series of tests to determine the impact values with various drawing temperatures of steels having crystalline, very reedy or woody, slightly

reedy and fully fibrous fractures. Bars 1⅝ in. in dia. and 60 in. long were obtained, one for each of the above fractures. The bars were given a preliminary heat treatment by heating to 1550 deg. Fahr., holding at heat for 1½ hr. and cooling in the air; then heating to 1425 deg. Fahr., holding at heat for 1½ hr. and cooling in the furnace.

The bars were split with a milling cutter as shown in Fig. 16. This placed the test bars about half way from the center to the outside of the bar. The end view also shows the system used in placing the notches in the test bars. After the bars were split, the quarters were made into test bars in accordance with the square Izod impact system.

The test bars were heated in a Leeds & Northrup electric hump curve furnace to 1520 deg. Fahr. and

Fig. 18 (Left)—S.A.E. 3140 Steel, Showing a Large Grain Structure

Fig. 19—S.A.E. 3140 Steel, Showing a Medium Grain Size

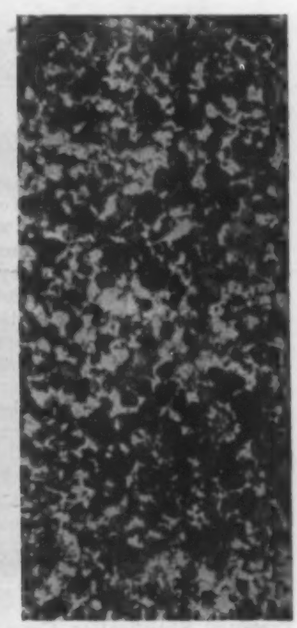


Fig. 20—S.A.E. 3140 Steel Showing a Small Grain Size

quenched in oil. The test bars were then very carefully drawn at intervals of 25 deg. and from 300 deg. to and including 1000 deg. They were held at heat for 1 hr. and cooled in air. The impact values were obtained on an Olsen impact machine and are shown in Fig. 17. The Brinell hardness was taken on an Alpha Brinell machine. Two or more readings were taken on each specimen.

Above 750 deg. Fahr. the hardness varies considerably with the different fractures, the crystalline bar being the hardest, with the fully fibrous and the slightly reedy the lowest.

The impact value of the fully silky fibrous bar is higher than any of the others after 450 deg. Fahr. The curves of the crystalline and very reedy bars are very nearly the same and run from 10 to 25 ft.lb. under the curve for the fully fibrous bar. The change from a brittle crystalline fracture to a fibrous or tough fracture does not take place at the same temperature for all of the bars. These transitions took place as follows, in relation to the drawing temperature: Fully silky fibrous, 725 to 750 deg. Fahr.; slightly reedy, 750 to 775 deg. Fahr.; very reedy or woody, 775 to 800 deg. Fahr.; crystalline, 825 to 850 deg. Fahr.

It was very interesting to observe that as soon as the very reedy test bars began to break with a tough or fibrous fracture, the reedy or woody structure was again present. A more complete report of this series of tests will soon be available in a bulletin to be published by the engineering experiment station of the Michigan State College, East Lansing, Mich.

From practical tests extending over a period of several years, and the above impact values it appears that there is an enormous difference in the fatigue and impact values of bars with different fractures. Several steel companies can meet this specification. It is hoped that more of them will do fracture testing with a result that fully silky fibrous bars will become the rule rather than the exception.

Grain Size

The matter of grain size very rarely enters into a steel specification except in such cases as specifying "large grained normal steel" before we knew that we should specify "small grained normal steel." Yet the grain size varies enormously from heat to heat and to a somewhat lesser degree in the same heat. It does not seem possible by heat treatment to bring grains of different samples to the same size and keep them the same.

Some samples of S.A.E. 3140 steel, as received, were placed in a carburizing box and heated for 8 hr. at 1700 deg. Fahr. and then cooled in the box. The cores or centers of three samples are shown in Figs. 18, 19 and 20. The photomicrographs were taken at a sufficient depth so that the structure was not affected by the carburizing of the exterior. These samples show a large variation in grain size, yet this variation is typical of not only S.A.E. 3140 steel, but all steels which we have examined. It is true, however, that some average much larger than others, such as the carbon steels, while others have an average much smaller, such as the vanadium types of steels. But the point to be made here is that, regardless of whether the average grain is large or small, the variation seems to be greater than we should have in automotive steels.

Some of the reasons are that the large grained steel is very liable to be brittle. Many have found this in their experience with large grained normal steel. The large grains grow readily, while a small grained steel seems to change its grain size much slower. As a result a single quench can be used for case and core refinement. In addition to this, it appears that the fine grained steel has a much wider hardening range.

The only objection so far found to small grained normal steel is that it seems to absorb carbon somewhat slower than a large grained normal steel of the same analysis. This, however, should not be taken too seriously because exceptions have been found and in any case the extra time was not great. In no case was it as great as some of the variations that are found between normal and abnormal steel.

Several of the steel companies are doing considerable work on this problem. It is hoped that they

will continue their work and also that it will be taken up by others because, from work which we are now doing, it seems that grain size and the results of the fracture test are very closely related.

Summary

The steel companies should maintain a system of inspection such that seamy stock which would cause the customer trouble would be stopped at the steel mill.

It should be possible to obtain a more uniformly dense structure—i.e., freedom from soft and spongy centers.

Improvements have been made in the cleanliness of steel, yet the average quality is not satisfactory to the automotive metallurgist.

Regardless of whether it is possible by use of salt baths to harden abnormal steels or not, the fact still remains that "abnormal steel is more prone to give soft spots than normal steel." Therefore it is hoped that the steel companies will find it possible to so improve their practice that abnormal steels can be eliminated.

Fracture testing opens up a wonderful field for the improvement of automotive steels.

Grain size varies enormously from heat to heat. It is hoped that considerable work will be done along this line, because fine grained normal steels seem to be much better than coarse grained steels.

So far as known, this is the first paper which has ever been presented, in which the main object was to show the improvements needed in automotive steels. Let us hope that it will be accepted by the steel companies in the spirit in which it is given; namely, one of cooperation and help in producing a high-quality and more uniform automotive steel.

SCRAP SPECIFICATIONS

Tentative Classification for Material Used by Iron Rolling Mills Decided on

The National Association of Purchasing Agents, Woolworth Building, New York, has announced the tentative classifications of old material used by iron rolling mills, which will be considered by a conference in January, 1926, to be called by the United States Bureau of Standards. The specifications for iron rolling mill scrap are an addition to the classifications on other kinds of iron and steel scrap adopted by a national conference at the United States Bureau of Standards Jan. 12, 1925.

A standard scrap purchase form, which has been prepared jointly by the National Association of Purchasing Agents and the National Association of Waste Material Dealers, has been drawn up and is being submitted to interested persons and companies with a request that criticisms and suggestions regarding this contract form and the scrap specifications be submitted to the purchasing agents' association before the January conference. The new scrap specifications follow:

Proposed Specification Covering Iron and Steel Scrap for Iron Rolling Mills

1. *Iron Axles*
   Iron railroad car axles; M. C. B. sizes, free from locomotive axles and defective or imperfect forgings.
2. *Steel Axles*
   Steel railroad car axles; M. C. B. sizes, free from locomotive axles and defective or imperfect forgings.
3. *Iron Rails.*
   Standard section tee rails, original weight 50 lb. per yd. or heavier, minimum length 4 ft.; free from frog, guard, switch, curved and turntable rails.
4. *Steel Rails*
   Standard section steel tee rails, 50 lb. per yd. and heavier, 5 ft. long and over. Suitable for re-rolling. Free from bent and twisted rails, frog, switch and guard rails and rails with split heads and broken flanges.
5. *Shafting*
   Iron and soft steel, 1½ in. to 8 in. round and square; 4 ft. and longer in straight bars.
6. *Arch Bars*
   Iron railroad arch bars and transom bars.
7. *Iron Angle or Splice Bars*
   Wrought iron—50 per cent to be whole bars.
8. *No. 1 Railroad Wrought*
   Heavy wrought iron from railroad shops and cars, 6 in. and longer, including iron links and pins; flats ¼ in. thick and over; rounds and squares, ⅝ in. thick and over; free from any attachments.
9. *No. 2 Railroad Wrought and Track Scrap*
   Heavy wrought iron and soft steel scrap from railroad shops and cars, from 2 in. to 6 in. long, but including track bolts, spikes and nuts. All to be free from steel shapes and plates.
10. *Cut Forge*
    Iron and soft steel scrap suitable for piling purposes without further preparation. Material to be ⅝ in. or heavier, 4 in. or narrower and not over 26 in. in length or shorter than 2 in. May include wagon tire if cut into 6-in. lengths or shorter, also horseshoes if cut into 3 pieces. Must be straight and flat; also free from plate, sheet, hoop and washer scrap punchings and similar materials.
11. *Shop Scrap*
    Wrought and soft steel bar, shape and plate ends, punchings and shearings, free from curly clippings and hard steel, all suitable for fagoting.
12. *No. 1 Busheling*
    Iron and soft pipes and flues (clean), tank and bands No. 12 and heavier, boiler plate punchings and clippings and soft steel and iron drop forgings and trimmings; nothing to be over 8 in. long or wide, free from galvanized or tinned stock. All steel must be under 0.12 per cent carbon.
13. *No. 2 Busheling*
    Cut hoops, sheet, cotton ties and similar light material; nothing to be over 8 in. long or wide; free from dirt, galvanized or tinned material, or other similar inferior scrap.
14. *Pipes and Flues*
    Wrought and soft steel. Must be free from dirt or lime and from riveted seams; not over 6 in. diameter.
15. *No. 1 Mill*
    Iron and soft steel bars not less than ⅜ in. round or square and flats no thinner than No. 12 wire gage, including heavy railroad sheet; tank in separate sheets and rings, boiler sheet and rings, clean pipes and flues, heavy punchings and clippings and strictly soft steel agricultural implement shapes. All steel must be under 0.12 per cent carbon.
16. *No. 2 Mill*
    Iron and soft steel hoops and sheets, railroad sheet, cotton tie clippings and ties, skeleton sheet scrap and iron too light for No. 1 Mill; free from galvanized, tinned or badly rusted material.
17. *No. 1 Railroad Sheet*
    To be under ¼ in. thick consisting of cut smoke stacks, hoops, band iron and steel, pressed steel hand car wheels, scoops and shovels, free of wood, wire, rope, cushions and other similar springs and lime-encrusted pipe and flues from boilers. Must be free from galvanized iron or tin.
18. *Axle Turnings*
    Wrought iron and steel railroad car axles, turnings and chips; free from tire turnings.
19. *Turnings*
    Machine wrought and steel, clean and free from borings and drillings, other metals, dirt, lumps and badly tangled material.
20. *Drillings*
    Wrought or soft steel, clean and free from other metals, dirt and lumps.
21. *Mixed Borings and Turnings, and Cast Borings*
    Clean and free from other metals, dirt and lumps.
22. *No. 1 Cast Iron*
    To be all clean cast iron scrap, nothing under 10 lb. in weight, nor over 48 in. long or 18 in. wide. To contain no brake shoes, cast iron soil or drainpipe, cast iron colums, stove scrap or burned iron of any description and to be free from steel parts.
23. *No. 1 Boiler Cut*
    Boiler sheets and rings and riveted flues not under 16 in. diameter, all rivets cut, no piece over 500 lb.
24. *Bundled Sheet*
    Bundled skeleton, bundled cotton ties or wool ties in bundles not over 18 in. in diameter and 30 in. long; tied so they will not come apart, but not tightly compressed; free of non-ferrous metals.

NOTE: Material on all of above grades, unless otherwise specified, must be free from high-carbon or alloy steel.

Soft steel herein mentioned is considered to mean 0.20 per cent carbon and under.

SURFACE GRINDER

Controls Located Conveniently and Mechanism Accessibly Mounted

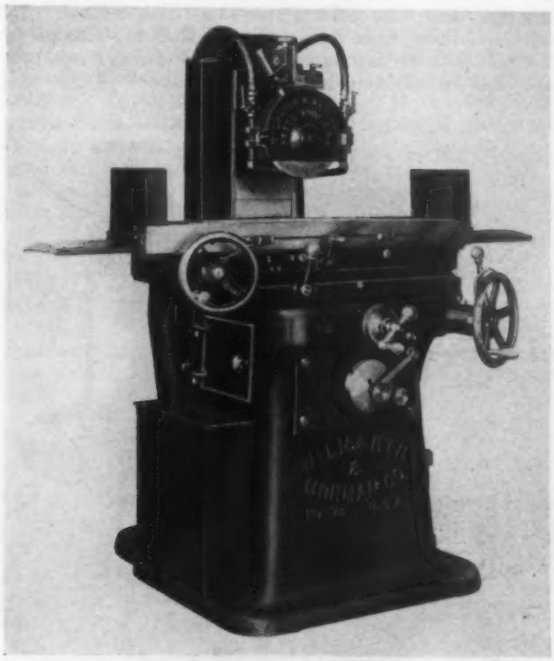
Provision for convenient operating control and accessibility of all mechanism are features of the improved No. 78 "Super" surface grinder, recently brought out by the Wilmarth & Morman Co., Grand Rapids, Mich.

Location of controls may be noted from the accompanying front view illustrations. The handwheel for raising and lowering the grinding wheel from and to the work is at the right, and is graduated to 0.0005 in., spaced 5/32 in. apart. The longitudinal table-feed handwheel is at the left, and the cross-feed ball crank handle, with dial graduated to 0.001 in., is at the front of the machine. An automatic throw-out cross-feed lever, with adjustable dogs to set for the width of grind, is provided, this being located at the right above the elevating handwheel.

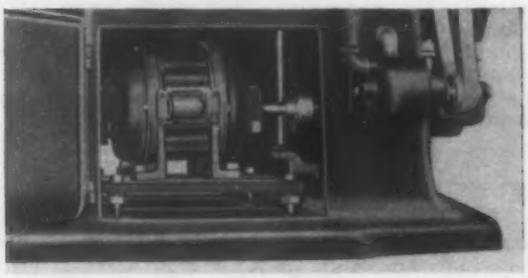
The longitudinal table start-and-stop lever, located on the saddle to the right of the table handwheel control, automatically throws the table from hand to power feed or vice-versa by engaging and disengaging clutches. When power feed is used, the handwheel control is cut out. Feed at one or both ends of the stroke can be obtained by turning the knurled knob at the lower right-hand corner of the removable plate at the front of the machine.

Ball and roller bearings have replaced to a large extent the bronze bearings formerly used. All mechanism, such as the clutch, gear box, and worm drive, are individual units and are accessible by removing the plate on the front of the base of the machine, an arrangement which eliminates the necessity of removing the table and saddle, as heretofore. Doors or openings are provided in frame to facilitate oiling and maintenance of mechanical parts. A 1½ hp., 1200 r.p.m. motor is mounted in the base, as shown in the illustration, and is connected to the drive spindle by means of a flexible coupling The main spindle is provided with deep-groove ball bearings arranged with automatic take-up in combination with adjustable take-up. A clutch of hardened steel and arranged to travel on ball bearings on a hardened steel shaft, the balls acting as a key for the driving clutch, is a feature. The free action of this clutch is claimed to eliminate jar at the reverse of the table, and the clutch will not slip-up prematurely or stop on center.

The water or coolant tank is accessibly mounted on the outside of the machine, the coolant flowing directly from the saddle to the tank through the pipe shown on the left-hand-side of the machine. The wheel truing device is of the built-in type, the wheel being trued without disturbing the work on the table. The longitudinal travel of the table, the working surface of which is 6 by 22 in., is 22 in. and the transverse travel, 8 in. The machine grinds 11 in. high under a 10-in. wheel. The table feeds longitudinally at 188 in. per min., and the automatic feed per stroke of table is 0.015 to 0.125 in. The floor space occupied by the machine is 44 by 86 in., and the weight is 2300 lb. net.



Accessibility of Parts Is a Feature. The clutch and other parts may be reached by removing the front plate. The motor is mounted in the base, as shown in view below



How Far Should a Foundry Mechanize?

Not long ago, in the course of a general round-table among several men in the iron and steel trade and some foundrymen, the moot question again came to the fore: "How far is it advisable to go in mechanizing a foundry?"

David Evans, president Chicago Steel Foundry Co., said: "The limit must be the point between a drive for mere profits—immediate cash returns—and a sincere desire to contribute something constructive to the world of useful arts, without the sacrifice of those things usually classified as the humanities. To seek large profits quickly, through inexorable production methods, is to 'profiteer' on the employee—and is just as reprehensible as to plod sleepily along in a rut, which sooner or later will end in the death of the business through dry rot.

"A basis of old time practice is necessary to the modern foundry. Mechanization should be used not to supplant but to support and supplement it.

"My thinking on the subject is best expressed by our own plant. Among the steel foundries of the country it ranks with the best. It is well constructed and well laid out for the production of medium-sized steel castings, and its operations are thoroughly mechanized and synchronized. It is 100 per cent electrical: electric furnace melting, electric oven drying, electric annealing and electric power. Wherever possible the processes are under automatic control and yet, notwithstanding the large and complete mechanical equipment, this foundry has always made it a practice

to maintain and depend upon a corps of experienced old-school foundrymen who understand fully the art of hand molding, and are capable of utilizing mechanization in applying their experience.

"A foundry serving the public must be prepared to do anything it is called on to do and to do it quickly. Not all work is adaptable to production methods. Frequently, though, it is just this sort of work that buyers need most—and it is usually the most difficult to obtain.

"A good motto for any foundry is 'Cast anything for anybody, if it can be cast' and while this policy frequently attracts work in which there is no profit, it serves to build up a reputation for dependable, prompt service, cheerfully extended to all who wish to avail themselves of it. After all, that is the basis for relations which result in the best and surest year-in and year-out profits."

Garvin Machine Tools Offered by John B. Stevens, Inc.

Screw machines, duplex millers, duplex slotters, cutter and reamer grinders, surface grinders and oil pumps previously manufactured by the Garvin Machine Co., New York, are being built and marketed by John B. Stevens, Inc., 27 Cleveland Place, New York. The same company manufactures the Stevens screw head slotters, hand or speed lathes, milling machine vises, multiple spindle centers and duple horizontal drilling, boring, tapping and threading machines. It will act as distributor for the Garvin cam cutters, profilers, hand millers and air devices of the Frew Machine Co., Philadelphia, and will be agent for the Skinner-Garvin air chucks of the Skinner Chuck Co., New Britain, Conn. J. B. Stevens, president and treasurer of John B. Stevens, Inc., J. Goldsmith, vice president, and R. Frankel, secretary, were connected for many years with the Garvin Machine Co.

Multiple-Head Air Brush

A new air brush or paint sprayer with an interchangeable, combination round, revolving, floating and adjustable fan spray air brush head has been placed on the market by the Paasche Airbrush Co., 1909

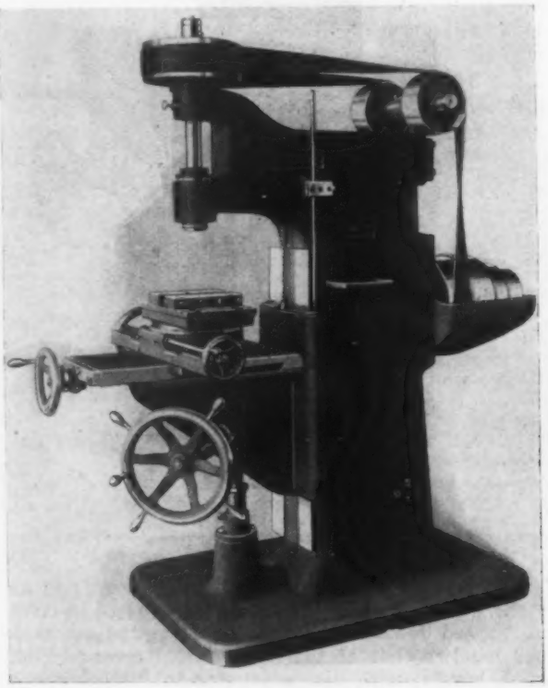
Diversey Parkway, Chicago. It is designed primarily for lacquer, but is said to handle paint as well.

The device is offered as being suitable for finishing or coating with materials from the lightest to the heaviest, coarse or fine, and hot or cold. The crescent-shaped fan with balanced air ports and with the round air cone cap is said to prevent a split or uneven spray. It floats into accurate alinement with the fluid valve plunger, eliminating leakage of paint. The arrangement permits using a strong jet of clean air for dusting off the work before painting and of graduating the spray to a fine line, or to a smooth wide fan spray 12 to 16 in. wide. The spray is controlled by the trigger, which is said to permit finishing small and large surfaces rapidly with minimum waste of material, the finish being glass-like and without roughness.

Improves Die Sinking Machines

Heavier construction with increased rigidity to meet severe service is outstanding in the new design Nos. 2 and 3 die sinkers being placed on the market by the Pratt & Whitney Co., Hartford. The increase in weight is about 30 per cent over the previous model, and is mainly in the column. The wearing surfaces on the knee slides and the two table slides have been broadened, with the result that wear has been minimized and the accuracy of the machine increased.

The drive of the new machine has been changed, the cone pulley having been moved to a higher position in the back of the column. This feature adapts the machine to either belt or motor drive, although retaining the advantage of the smooth belt drive to the spindle. The idler pulleys carrying the spindle-driving belt have been made adjustable, so that the tension of the belt may be regulated, and these pulleys are now provided with oilless bearings. The knee of the machine has been counterweighted to facilitate the operation, and the elevating screw has been equipped with ball thrust washers which further increase the ease of operation. A new spindle-pulley lock to facilitate removal of cutters and a wider range of spindle speeds are other improvements.



The Increase in Weight, Amounting to About 30 Per Cent of the Previous Model, Is Mainly in the Column. The cone pulley has been moved to a higher position on the column, adapting the machine to either belt or motor drive

Many features of the previous models have been retained. The large handwheels are in approximately the same location, and the feed screws are equipped with micrometer rings so that the movement of the work may be controlled accurately. An adjustable stop is provided to assure proper depth of cut. Graduations and zero marks on all sides permit of rapid centering and setting the work under the cutter.

The rotary vise feed, stressed as an important feature is claimed to make a circular cut easy to handle, and without which such a cut presents considerable difficulty. The spindle is equipped with lapped thrust washers, and large taper bronze boxes to assure accurate alinement. The range of speeds available at the spindle has been greatly increased. Additional equipment is available, including cutters, chucks, collets, a tilting circular vise, a cherrying attachment and cherrying cutters.

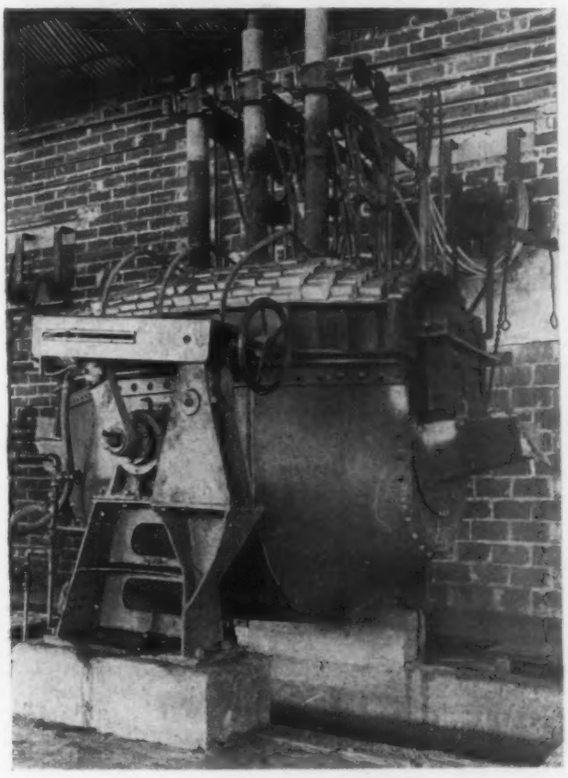
NEW ELECTRIC FURNACE

Kay Type for Steel Has Two Spouts—Other Features

A new electric steel furnace, known as the Kay furnace, has been developed by Lloyd D. Kay, president Kay-Brunner Steel Casting Co., Los Angeles, Cal. It is of the tilting type in which the body is mounted to rotate on a substantially horizontal axis with a spout at each end for pouring the molten metal. A melting unit has been operating for several months in the Kay-Brunner plant.

The part of the basin within the body of the furnace leading toward the spouts is so designed that the fire brick lining, forming the basin, converges toward the spouts, so that when the furnace is tilted the depth of the metal is increased as it nears the pouring lip. This facilitates the pouring of the metal from a considerable depth below the slag and is pointed to as particularly advantageous in pouring small steel castings, because it assists in maintaining a high temperature and consequent fluidity.

The axis on which the furnace rotates is located near the center of gravity. The tilting device is operated by a hand wheel working in unison with a nut and screw device and an arm rigid with the furnace body. The mechanism is so adjusted that it may be rocked with a slight exertion of force and may be locked in any position. When the furnace is tilted, counterweights are provided which move backward and compensate for the forward movement of the metal as it nears the pouring spout.



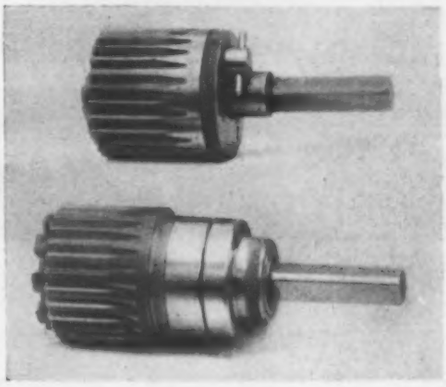
This New Electric Arc Furnace Has Two Pouring Spouts

Another feature is that the position of the electrodes can be altered at will with respect to the furnace wall, thereby presenting new paths for the electric current and preventing the concentration of its destructive effort at any particular point on the wall. Means are also provided by which the position of the electrodes can be adapted to the opening through the cover.

Each electrode arm is bifurcated at its near end to permit an upper and lower fork. These forks are provided with means for engaging the guides to enable the guides to support the arms and to permit the arms to be raised and lowered. The electrode holders comprise a body with a socket opened on the side and provided with a cap movably mounted to close the open side of the socket. By swinging this cap open an electrode can be inserted by a lateral movement and then held by closing the cap and dropping a bushing against the conical face of the cap to wedge against the outer side of the electrode, thus securing the electrode by a simple and effective method.

Safety Trigger Gear on Cincinnati Planers

A close-up view of the safety trigger gear mentioned in recent descriptions of the Hypro planers of the Cincinnati Planer Co., Cincinnati, is shown in the accompanying illustration. As its name indicates, safety was the basic consideration in designing the device. From the illustration of the trigger gear previously used, shown above the new device, it will be noted that the pawl handle, which is used to change the direction of the feed, has a pin through the head. With this arrangement, if the planer operator should change the direction of the feed at the same time the feeding is taking place, he would probably get his fingers caught between the pin and shaft. On the new style of trigger gear, projections that might catch the operator's fingers have been eliminated and in place of the handle and pin, a round knurled knob is used. With this device, if the operator should make a change in feed direction as cited above, the knurled knob would turn in his hand without danger of injury. This design also permits of changing the direction of the feed at any time.



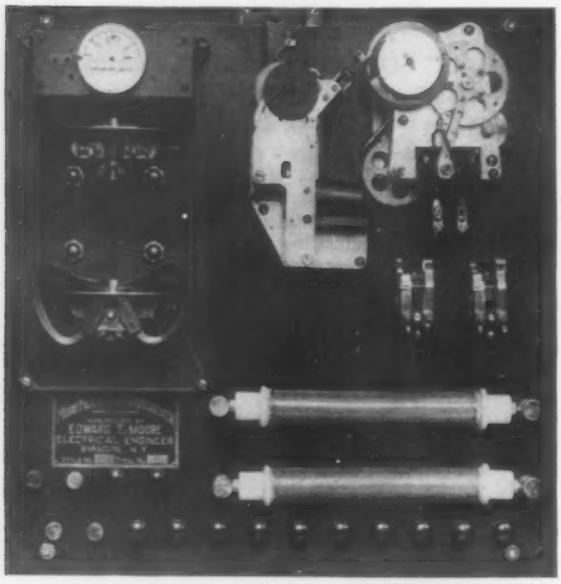
The Safety Trigger Gear, With Round Knurled Knob, Is Shown in the Lower View. The upper view is of the previous style

Demand Limiter for Electric Furnaces

A new model of the Edmoore demand limiter, or limitator as it is called, for use on electric steel melting furnaces and for other applications, has recently been brought out by Edward T. Moore, consulting engineer, Syracuse, N. Y. It is an electrical device for automatically controlling maximum demands or peak loads on electric power systems. The new model is known as the 1-A Senior Type Limitator. It has a watt-meter element which is connected to the current and potential transformers at the main metering point of the power entrance to the consumer's premises. An electromagnetic mechanism is embodied in the machine, which is actuated periodically depending upon the period of demand by a set of contacts mounted in a standard totalizing watt-hour meter.

As shown in the illustration there are two induction

elements mounted on a common shaft. The torsion on the suspending wire is varied by the rotating dial indicating the secondary wattage, so that any load setting may be obtained. When power in the circuit reaches the amount indicated by the dial setting, movable and stationary contacts co-act, closing the lock-in relay. A load-adjusting rotating cam, mounted to engage the trip finger of the transfer switch of the integrating mechanism, closes a second relay which opens the relay of the furnace control panel connecting the three-load adjusting resistances to be connected into the circuit of the furnace regulator panel contact-making ammeters, and reducing the power input. The auxiliary clock mechanism operates a demand-period cam, permitting the integrated load over any predetermined demand period to be secured.



New Model of a Power Demand Limitator for Electric Furnaces

The power demand limitator fills a dual role—it regulates the momentary fluctuations in power and limits the integrated maximum demand. This is particularly advantageous where power schedules have a clause which provides that, when the instantaneous peaks exceed a certain amount, these peaks will be used for billing purposes in lieu of the integrated peak.

Crane Mounted on Truck or Trailer

Speed, light weight and sturdiness are claimed for the truck and trailer crane designated as the model 203-A, which is being placed on the market by the Harnischfeger Corporation, Milwaukee. The machine is designed to handle a ½-yd. clamshell bucket on a 25-ft. boom, or for lifting 10,000 lb. at 10 ft. radius.

The truck or trailer mounting permits of moving the crane from job to job at regular truck speed, and fast in operation on the job is a feature, the line speed being 125 ft. per min. and the swing speed 5 r.p.m.

Compactness is largely due to having all three drums arranged on one shaft, the hoisting and digging drums being mounted side by side and the boom hoist placed on the left end of the shaft. This arrangement permits of having the main machinery behind the center pin, which is claimed to provide better balance and eliminate the necessity of a large counterweight. The short tail swing of 7 ft. 1½ in. and the overall width of 8 ft. 4 in. is stressed as permitting the machine to work in close quarters and travel in narrow alleys. The total weight of the machine is 13,000 lb. which includes the entire crane equipment with the structural frame which fits on the truck, but does not include the weight of the truck. A 5 or 7½ ton truck can handle the crane.

The revolving frame and drum bearing frames are of cast steel, and the swing gear is heavy. Any shaft on the machine can be removed without disturbing adjacent shafts and gears and bearings can be reached conveniently for lubrication. The revolving rollers may be removed from the top of the frame without jacking up the machine. Drum clutches and brakes are of the outside band type, and may be conveniently adjusted and renewed.

The machine is driven by a four cylinder, 40 hp. motor, which is mounted at the rear of the revolving frame. The motor clutch is of twin disk type, fully inclosed and supported in ball bearings. All gears are of steel and have cut teeth. The two main drums are controlled by independent clutches and brakes and both drums run at the same speed which permits of using a clamshell bucket without special attachments. The boom hoist is driven by planetary gears at a line speed of 62½ ft. per min., and a self-locking connection is provided to prevent lowering at a line speed in excess of 125 ft. per min. This boom hoist can be operated with or independently from the main drums and swinging machinery. All controls are within convenient reach of the operator.

Trailer mounting of the crane has the advantage of releasing the truck for hauling service. The trailer crane is provided with mechanism to propel itself at a speed of 1¼ mi. per hour, this being accomplished by a center drive shaft and two driving chains, connected by jaw clutches to the drive shaft. On both truck and trailer cranes, jacks are provided which screw down against the rear wheels, relieving the springs of the load when the crane is operating. Chains pass from the jacks, around the wheels, acting as rebound snubbers. The machine may be equipped with clamshell or dragline bucket, crane hook, electric magnet or pile driver.

The Crane May Be Mounted Either on a Truck or Trailer, the Latter Mounting Being Shown Above

Tilting Electric Melting Pot

A recent development in electric melting pots is the unit here illustrated, which is intended for melting lead, babbitt, solder, tin and similar metals. It is equipped with a 12 in. crucible having a capacity of 180 lb. of lead, and is 21 in. in diameter and 14 in. high overall. The pot may be arranged with a tilting mechanism, as shown, or arranged for use as a stationary pot, fitted in a bench or seated on the floor. It is manufactured by Harold E. Trent, 259 North Lawrence Street, Philadelphia, and is available in kilowatt capacities ranging from 3 to 6 kw., depending upon the alloy, temperature and time required for melting. Temperature controls, mounted on the side of the pot opposite the handwheel, may be furnished.

Electric Pot for Melting Lead, Babbitt and Other Metals. The crucible capacity is for 180 lb. of lead

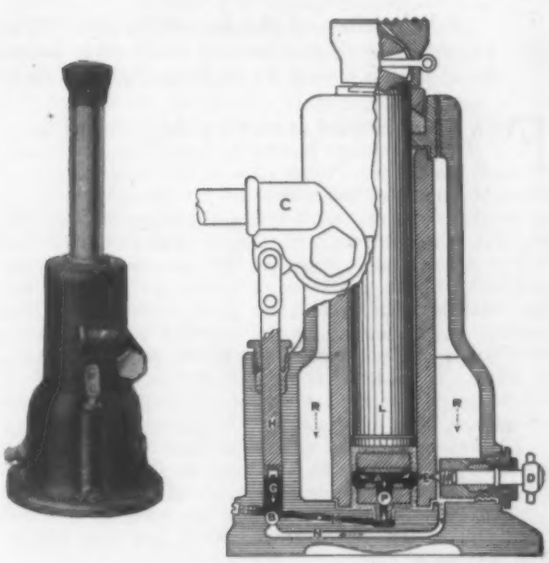
A smaller electric melting pot, having a crucible 3½ in. in diameter and a lead capacity of 10 lb., is also being placed on the market, this pot being intended for use by plumbers and for melting small quantities of babbitt. This pot is 7¼ in. outside in diameter and 7 in. high, has a casing of sheet steel, and a handle which is arranged to be always cool enough to permit the pot to be carried without discomfort. The pot can be supplied with a single heat or a three-heat switch and 10 ft. of flexible cable. Spouts and additional handles are supplied when the pot is to be used for pouring.

New Hydraulic Jack

Smooth and quick operation are advantages claimed for the jack here illustrated, which is known as the Pedersen "oiljak" and is being introduced by the Oil Jack Co., Inc., 1457 Broadway, New York. The device is available at present only in the 10-ton size, 6-, 3- and 1-ton jacks to be put in production later.

The device is said to raise the load with little effort, and to lower it without jar or shock. The jack may be operated with inch-by-inch motjons of the handle, if desired, and may be stopped instantly at any position. It is adapted for use in cramped quarters; in dangerous places, it may be operated at a distance by using a long handle. The construction and operation of the jack may be noted from the accompanying illustrations.

Raising the handle of the jack, which fits into socket *C*, raises pump plunger *H*, drawing oil from reservoir *R* through channel *N* and ball check valve *B* into chamber *G*. Lowering handle compresses oil in chamber *G*, seating valve *B* and forcing oil through channel *M* past ball check valve *P* into chamber *A*, causing plunger *L* to raise and lift the load. To lower the load the needle valve *D* is turned slightly, which serves to open outlet *E* and permits oil to travel back into reservoir *R*. Motion of the handle controls the lifting of the load at any point of stroke either up or down, and the load positively holds its position. The needle valve *D* controls speed of lowering; closing needle valve holds load at any point.



The Jack May Be Operated With Inch-by-Inch Motions, and May Be Stopped Instantly at Any Position

Oil is not under pressure in reservoir *R*, which is in the main casting, the pressure occurring in chamber *A*, which is surrounded by a steel jacket. Long service has been a primary consideration in the design. The swivel head is corrugated and hardened to assure firm grip under load. The ram is of steel, is 1⅛-in. diameter, and is heat-treated and ground. Adjustable oil-retaining packings are provided to prevent leakage. The rocker arm has a positive stop, oscillates on a heat-treated fulcrum bolt and projects over the pump stem and thus protects it. The base is 6½ in. in diameter.

Niles-Bement-Pond Co. to Give Up Pond Plant at Plainfield, N. J.

In the carrying out of policies of economy and concentration of manufacturing and other activities, the Niles-Bement-Pond Co., 111 Broadway, New York, has moved the business of its Pond Works at Plainfield, N. J., to the Niles Works at Hamilton, Ohio. The Niles Works has adequate facilities for handling the Pond lines in addition to its own, and this consolidation will enable the company to manufacture the Niles and Pond lines with increased efficiency and consequent economy.

Several months ago the general sales headquarters and accounting department of the company were moved from New York to Hamilton, Ohio, and the Bement plant in Philadelphia was given up, the machinery and building having been sold.

For the present the Pond Works will be continued in operation with a reduced working force to complete orders on hand and to finish partly completed stock machines as these are sold. Eventually the Pond Works and equipment will be offered for sale.

A motion picture film showing the processes in the manufacture of lapweld and buttweld pipe has been developed under the direction of R. J. Kaylor, manager of the publicity department Youngstown Sheet & Tube Co., and Walter Bartz, photographer of the company. The film is available for use for meetings of engineering, trade and other associations.

Business Upswing Should Last at Least Six Months More

Speculation in Stocks and Real Estate Constitutes an Unfavorable Factor Which Should Be Closely Watched

BY DR. LEWIS H. HANEY
DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

Favorable Factors

1. *The P/V Line rises*
2. *Commodity prices are stable; the recent trend moderately upward*
3. *Unfilled steel orders have increased sharply*
4. *Retail trade gained in October*
5. *Employment and earnings of labor have increased*
6. *Failures have decreased*

Unfavorable Factors

1. *Building activity declined in October*
2. *Trend of new enterprises is downward*
3. *Pig iron production tends to become too large*
4. *Imports are relatively large in comparison with exports*
5. *Speculation in stocks and real estate is over-expanded*

A balancing of the favorable and unfavorable factors indicates continued business expansion. While money rates now promise to hold firm, there is no indication of a level which would be sufficiently high to curtail such expansion.

FIG. 1 is of interest as showing the following facts: 1. The tonnage hauled by the Class I railroads of the United States (one of the best indexes of physical volume of industry) did not increase so much as usual in October. Accordingly, the adjusted index fell slightly below September. This is due chiefly to the lighter average car loading. Perhaps because of the anthracite strike, the average number of tons per car has recently been even lower than a year ago. The general picture shown by the railroad tonnage curve, however, is that of a high and stable physical volume of trade. In spite of the small decline in October it will be noted that the tonnage was a little greater than a year ago, even after allowing for normal growth.

2. Bank debits (the volume of bank checks drawn) averaged $12,319,000,000 per week in October against $11,037,000,000 in September and $10,042,000,000 in October, 1924. Bank debits show an irregular upward trend and in October were nearly 23 per cent higher than last year.

A study of Fig. 1 leads to the conclusion that we are about 15 months along in a major upswing in the business cycle. No reason is now apparent why this upswing should not continue for at least six months more. Considerable gains are almost certain for November and December. While some reaction is probable early in 1926 renewed expansion seems likely in the spring.

Evidence of speculative excesses continues to appear in the relatively high level of the bank debits curve. While bank debits are not soaring so rapidly as earlier in the year, the volume of checks is even greater in comparison with the physical volume of trade than it was last February. Only a small part of this excess is due to higher prices. Mostly it represents an excess of buying and selling over production; that is, speculative transfers of property are undesirably large and constitute one element of weakness in the present situation. It is no doubt in recognition of this fact that rediscount rates have recently been advanced at the Boston, Cleveland and Philadelphia Federal Reserve banks.

Unfilled Orders Encouraging

THE most optimistic of all reliable barometers of trade this month is the index of unfilled steel orders. Even when the unfilled orders of the United States Steel Corporation are adjusted to allow for seasonal variations, they show a sharp gain in October and the percentage of increase over September is large. Usually

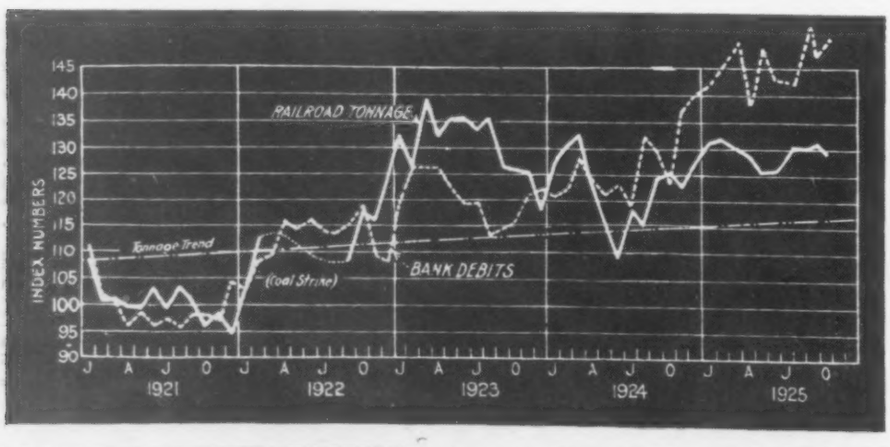


Fig. 1—Railroad Tonnage Is Still Fairly Steady at a Point Close to the Spring Peak of 1924: Large Bank Debits Indicate Speculation

In This Issue

Business upswing should last at least six months more.—Some reaction probable early in 1926, but renewal of expansion likely to come in spring.—Page 1456.

Ohio debt control law prevents excessive increase in taxation. — Prevents state borrowing for current operating expenses; no bonds can be issued for longer period than life of improvement purchased with proceeds.—Page 1442.

Does distribution of stock ownership mean impaired management? — If no group is strong enough to assume and hold control, management may be ineffectual; some concentrated interest desirable to insure adequate management.—Page 1460.

First ten months' imports of pig iron, scrap and ferroalloys almost double those of last year.—Sharp increase also in incoming tonnage of nails and screws.—Page 1491.

Iron and steel exports for this year will be close to 1,700,000 tons.—If present rate is maintained: slight gain in October—structural shapes up 6000 tons.—Page 1491.

Fracture tests reveal impact and fatigue qualities of automotive steel.—Quickly show defects in test bars: fine grained normal steels preferable to coarse grained.—Page 1447.

Better refractories could be made for blast furnaces.—But operators are apparently satisfied with present grades plus liberal use of cooling plates.—Page 1446.

Builder saves money by using steel frame and metal lath. — Steel cost $75 less than wood for five room-and-bath bungalow: realtor predicts increase in use of steel for homes and farms.—Page 1445.

Americans have loaned millions to German steel mills.—Our investors supply the means by which Germany will attempt to compete with us for world steel trade.—Page 1460.

Four remedies for excessive taxes.—As little government as possible; use of local and State government machinery in place of Federal; pay as you go; and keep graft out of government by keeping government out of business.—Page 1490.

How far should a foundry mechanize?—"Local conditions and tonnage will determine," says H. M. Lane. "Enough to supplement rather than supplant old time practice," says David Evans.—Pages 1443, 1451.

Conveyors reduce labor costs in sand handling 95 per cent.—Bucket elevators mounted on electric trucks each replace four men on continuous shoveling.—Page 1437.

Arc welding structural steel saves one-fourth estimated labor cost.—Tests of welding to replace rivets prove successful; methods now in constant use.—Page 1440.

New scrap specifications cover material for iron rolling mills.—Tentatively announced by National Association of Purchasing Agents.—Page 1450.

Bronze welding of cast iron pipe has two advantages.—Shorter time required for weld, and lower welding temperature; has no detrimental effects on base metal, but may weaken material in case of cast iron high in phosphorus.—Page 1465.

Name "high tensile structural steel" suggested in place of so-called silicon structural steel.—Which originally contained from 1 to 2 per cent Si and now contains only 0.25 per cent.—Page 1467.

CONTENTS

November 26, 1925

Reducing Sand Handling Costs 1437
Structural Welding Saves Labor 1440
Says Foundry Gets Labor Leftovers 1443
More Steel for Homes and Farms 1445
Improvements in Automotive Steels 1447
Business Upswing Should Last Six Months More 1456
Bronze Welding of Cast Iron Pipe 1465

Government Costs More Than Food....1442
Life of Blast Furnace Linings.....1446
Scrap Specifications 1450
How Far Should a Foundry Mechanize?.1451
Accident Prevention 1466
Savings Made Through Motion Study...1466
Late Developments in Alloy Steels....1467
Machinery Exhibits at Sesquicentennial Exposition 1467
New Ford Duplexing Process.....1468
Barb Wire Substitute.....1468
Committee to Standardize Refractories.1468
Iron and Steel Capacity.....1469
Honor Memory of John Ericsson.....1469
Foreign Trade Problems.....1494
Coast Water Freight Rates Reduced....1495
Industrial Research 1496
Copper-Clad Asphalt Shingles. 1496

NEW EQUIPMENT

Surface Grinder 1451
Multiple-Head Air Brush.....1452
Improved Die Sinking Machine.....1452
Kay Electric Furnace.....1453
Safety Trigger Gear on Cincinnati Planers 1453
Demand Limiter for Electric Furnaces.1453
Crane Mounted on Truck or Trailer....1454
Tilting Electric Melting Pot.....1455
New Hydraulic Jack.....1455

STATISTICAL

Commercial Steel Castings.....1463
Iron, Steel and Machinery Sales to Russia Total $17,000,000.....1468
Exports Slightly Up in October.....1491
Increased Russian Iron Mining.....1492
Increase in British Steel Exports.....1494
Production in Terms of 1913.....1495
Canadian Output Gains.....1495

MEETINGS

National Founders Association.....1448
New York Safety Conference.....1466
American Management Association.....1469
American Participation in Foundry Congress at Liège 1492

DEPARTMENTS

Editorial 1460
Iron and Steel Markets.....1470
Comparison of Prices.....1471
Prices of Raw and Finished Products, 1473-1475
Non-Ferrous Metals 1487
Personal 1488
Obituary 1490
European Steel Markets 1493
Machinery Markets 1497

Career of the Electric Furnace

APART from the annual presentation for ten years of statistics of electric furnace installations in the metallurgical field, THE IRON AGE has described each new development as it became a commercial unit. For these and other manifold items of service it has had approval from a commonly unresponsive though definitely appreciative body of readers. Even so lately as NOV. 12 we gave a new high-temperature resistance furnace its introduction to the industry, and in the present issue is an account of a new arc furnace developed on the Pacific Coast. This week we give also the announcement of the Ford Motor Co.'s purchase of two furnaces to be used in a new way; namely, to superheat blast furnace metal for use in its iron foundry.

What has been said of the electric furnace might be said of many other lines of progress which it is THE IRON AGE'S aim to cover so completely that its readers may have no need of other reading so far as concerns their major vocations.

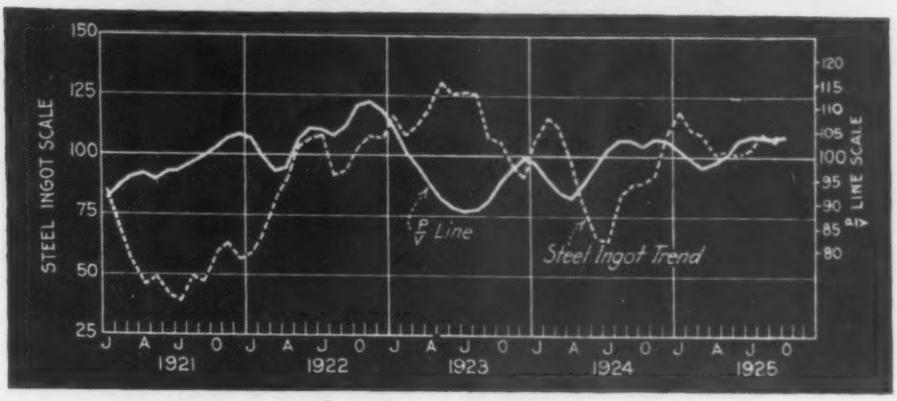


Fig. 2—Note How Closely the Trend of Ingot Production and the P/V Line Parallel

this condition indicates an expansion in industry in general as well as in the iron and steel industry.

As a rule, the price of heavy melting steel scrap at Pittsburgh advances either at the same time as the unfilled orders curve or shortly afterward. In October, however, our index of scrap prices fell a little below the September average and the market has lately been somewhat irregular. This appears to be due to the fluctuating or uncertain trends of the coke and pig iron markets and to a relatively large production of pig iron in comparison with steel ingots.

following a two months period of slight decline. The general impression given by the curve as shown in Fig. 2 is one of stability.

The output of steel ingots in October as usual followed the trend of the P/V Line. After making due allowance for seasonal variation and the normal growth of the industry, the October figure showed only a small net gain.

It may be concluded that the P/V Line indicates continued good business, but that expansion will be checked for a time early next year. It further indi-

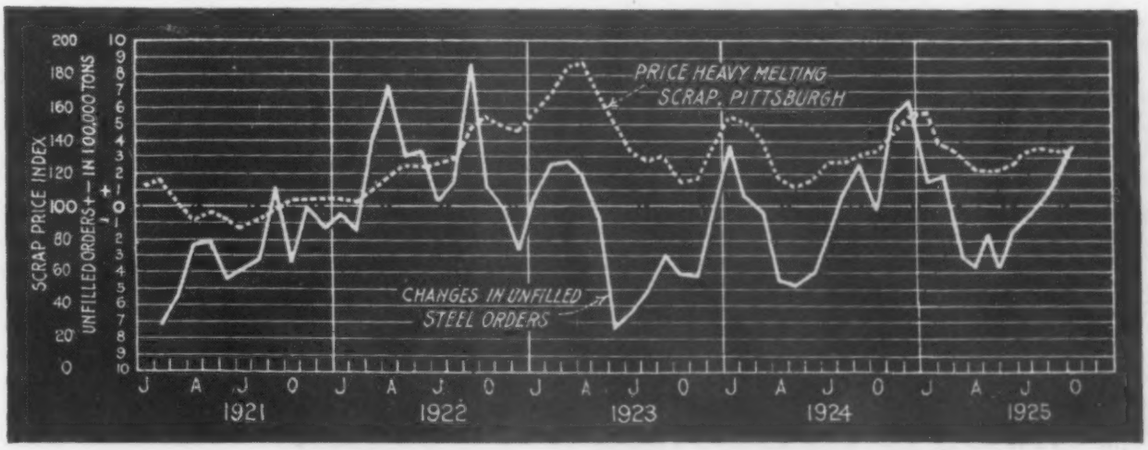


Fig. 3—The Upward Trend of the Unfilled Orders Line is One of the Most Favorable Business Indications

Continued improvement in industry is clearly forecast by the changes in unfilled orders. As to the scrap barometer, it indicates some irregularity in commodity prices, but it is to be noted that scrap itself is often irregular or weaker in the early winter months and is at present subject to abnormal conditions. While, therefore, it does not confirm the unfilled orders barometer, the October trend can not be considered as a serious adverse indication.

Steel Ingots and P/V Line

THE P/V Line (the ratio of commodity prices to physical volume of trade) rose a little in October, cates that ingot production will be held rather steady for a month or two, which is to be desired, as steel production is already something like 8 per cent above the trend of theoretical normal requirements.

Money Rates Advance

OCTOBER showed a very small rise in our adjusted index of open market money rates in New York. The rate on the best commercial paper in the New York market held unchanged in October at 4.25 per cent. As there is usually a very slight easing of money rates

(*Concluded on page* 1496)

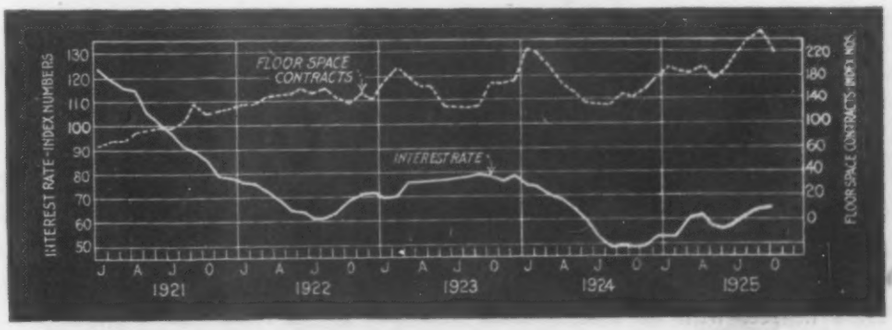


Fig. 4—Interest Rates Have Been Steadily Rising Since Last Fall: Their Effect on Building Volume Cannot Well Be Long Delayed

ESTABLISHED 1855

THE IRON AGE

A. I. FINDLEY, *Editor* W. W. MACON, *Managing Editor*

Member of the Audit Bureau of Circulations and of Associated Business Papers, Inc.

Published every Thursday by the IRON AGE PUBLISHING CO., 239 West 39th Street, New York

C. S. BAUR, *General Advertising Manager*

F. J. Frank, *President* George H. Griffiths, *Secretary*

Owned by the United Publishers Corporation, 239 West 39th Street, New York. Charles G. Phillips, *Pres.* A. C. Pearson, *Vice-Pres.* F. J. Frank, *Treas.* H. J. Redfield, *Secy.*

BRANCH OFFICES—Chicago: Otis Building. Pittsburgh: Park Building. Boston: 425 Park Square Building. Philadelphia: 1402 Widener Building. Cleveland: Guardian Building. Detroit: 7338 Woodward Ave. Cincinnati: First National Bank Bldg. Buffalo: 833 Ellicott Square. Washington: 536 Investment Building. San Francisco: 320 Market St. London, Eng.: 11 Haymarket S.W.1.

Subscription Price, United States and Possessions, Mexico, Cuba, $6.00; Canada, $8.50; Foreign, $12.00 per year. Single copy 25 cents.

Entered as second-class matter, June 18, 1879, at the Post Office at New York, N. Y., under the Act of March 3, 1879.

PRINTED IN U. S. A.

Distribution of Corporate Shares

THAT bankers and other intermediaries are allowed to exercise control over businesses by the diffusion of ownership among small investors was deplored by Prof. W. Z. Ripley of Harvard at a recent meeting of the Academy of Political Science. Professor Ripley dwelt upon what he considered to be the alarming divorce of the ownership of property, represented by securities emitted by corporations, from any direct accountability for its prudent and efficient management.

There is, indeed, something in Professor Ripley's thought that is worth considering. It is quite true that the stockholders of a corporation seldom attend corporate meetings. Practically, also, they have nothing to say in respect to the management of corporate affairs, although theoretically they have everything to say. However, as a practical affair of running things, democracy in corporate management is just as impossible as it is in running a nation, a social club or a Sunday school. What happens in corporate management generally is that some strong interest, while in the minority, is, nevertheless, preponderant, and the rank and file of stockholders are content, as humble partners, to leave their fate to such an interest.

Indeed, thousands of investors have acquired wealth for themselves on the principle of blindly following some great leader. There are multitudes who have made good out of the appreciation in the value of Steel Corporation shares by their faith in Judge Gary, themselves knowing nothing of the corporate affairs. So, also, with those who followed Mr. Coffin in General Electric and Mr. Vail in Telephone. The engineer, financier and banker unite in the opinion that there is an element superior even to the intrinsic soundness of an enterprise, and that is the nature of the management. A good management may get something out of a poor enterprise, and a bad management may spoil a good one.

We have known of great corporations the distribution of whose stock has been carried to the ultimate degree, with no concentration sufficient to permit dictation in management, the latter falling into professional hands, so to speak. This does not necessarily mean bad hands. A professional management may view itself very severely as the employee and the trustee of the stockholders, and lean over backward in its rectitude. We are inclined to think that a professional management, not personally holding the stock of its company to any great extent, is more likely to conduct itself in that way than otherwise. Such a management is apt to become ultra-conservative, over-cautious and non-progressive.

A stockholder in an excessively distributed concern might be the gainer by selling out and reinvesting in a company of sufficient distribution to afford a broad market at all times, but with a sufficiently concentrated interest to make sure that expert and experienced minds would attend to the management. Professor Ripley urges the extension of the powers of the Federal Trade Commission to protect the small investor. We should not like to be a small investor in any company to be controlled or supervised by the Federal Trade Commission or any other Governmental body. One might prefer to take his chances with even a buccaneering management that would let him have some dividend, whereas the Governmental hand might extinguish every possibility.

Our Loans to German Steel Companies

FLOTATION of a $7,500,000 loan in this country for Gutehoffnungshütte of Germany and the announcement that $50,000,000 is to be raised for the German potash syndicate, half of it to come from the United States, direct attention to the large amount of financing done here in the last year or more in behalf of German and Austrian steel and allied interests.

The Krupp Works of Germany borrowed $10,000,000; the August Thyssen Iron & Steel Works, $12,000,000; the Alpine Montan Steel Corporation of Austria, $5,000,000; the Rima Steel Corporation of Hungary, $3,000,000. The Allgemeine Elektricitäts Gesellschaft and the Siemens group (Siemens & Halske and Siemens Schuckertwerke), large electrical manufacturing companies of Germany, have obtained loans of $10,000,000 each. These foreign companies have paid a good rate of interest, 7 per

cent in each instance, and their bonds have been readily sold.

With the millions of dollars of capital which will come to this country under the debt refunding programs of various countries, much more will undoubtedly be invested abroad, else the United States will become glutted with capital that cannot find ready employment here without danger to our foreign trade. German mills before the war gained much of their foreign trade in steel by granting long-term credits, such as American mills were not disposed to give, and lately the need of these German producers has been sufficient working capital to carry on this credit business again. Thus American capital helps to furnish the means with which Germany and other Continental steel producing countries expect to meet the competition of our mills in the markets of the world.

The Value of Capital

THE anxiety shown regarding the New York Federal Reserve Bank's discount rate since the bank at Boston raised its rate from 3½ to 4 per cent has been chiefly due not to concern as to the earning power of capital in general but to concern as to the effect on security values on the Stock Exchange.

Economically speaking, high interest rates in the absence of disturbing factors betoken prosperity and progress. Men are anxious to do things, and this makes a demand for capital. But when undertaking languishes, capital has correspondingly less value and the interest rate is less. That is the trend, often concealed by disturbing factors, as when the rate demanded is high because of the apparent risk.

The question last week was whether share values had gone to levels which circumstances in future would not support—whether values had been raised by speculation. Some test would be furnished by an increase in the New York rediscount rate, which would tend to shake out some of the speculation.

A longer range factor is involved. The fact that capital was able to earn a certain rate of return ten and more years ago does not prove that present circumstances insure the same rate of return. If the value of capital has decreased since pre-war times, then share values should be higher without any change in the earnings of the corporations involved. Capital is like a commodity in that its unit value will decrease with increased supply relative to demand, or decreased demand relative to supply. A change in the value of capital may be responsible for part of the increase in stock market prices.

During the boom that broke in 1920, when commodity prices and wages had soared, some men actually attempted to justify high interest rates as being part of the new order of things following the war, using the curious argument that, as everything else had advanced, why not interest rates? The citation is made merely to show that some men were ready to approve an increase in the interest rate while now there is little disposition to consider the possibility that the normal and natural rate should decline.

Such changes, however, do occur, as everyone knows. In a new country, with development proceeding with particular speed, interest rates are naturally high, apart from the element of risk that may exist. As the country grows older and more settled in its ways and accumulates capital, the interest rate tends to decline. It is a very long range swing, and the fluctuations due to business cycles may becloud the showing so that the long time trend may not be easy to discern, but the tendency does exist just the same. The fact that the people of the United States have loaned so much money abroad since the war points to the existence of a large volume of capital relative to requirements.

To Give Steel Its Due

STEEL fabricators are not satisfied with their present volume of business. At the recent White Sulphur Springs convention they discussed the matter at length. In this much they were very like many other conventions. But they did more. They appropriated a comparatively large sum of money to help build their market. They discussed constructive methods of increasing steel consumption by broadening its field of service, and showed keen recognition of the merchandising problems of their industry.

In recent years the use of structural steel has not grown so fast as industrial building. Competitive materials have replaced steel in many buildings. In some of these cases the substitution was wise and economical; in others quite the reverse. As we understand it, the purpose of the institute is not to work against other building materials, but rather to be sure that each architect and prospective owner is aware of the real merits of structural steel.

Preparation of a standard sales manual, wider dissemination of the standard code of practice, educational work in conjunction with technical schools and a campaign of aggressive advertising—these are keynotes in the fabricators' program.

At the recent convention mention was made of a structure in Dallas. Here the original design was for structural steel; but the engineer was taken suddenly ill and the building was put in charge of two young technical school graduates. These men were unfamiliar with steel construction practice, but well primed on designing in competitive material. Accordingly they redesigned the building, though as it turned out in this particular case there was grave question as to the expediency of that decision, all things considered. Such a substitution need not occur if present plans come to fruition in getting oncoming engineers to think in terms of construction in steel.

Recognizing the truth in the saying that people do not act on the world as it is, so much as on the picture of it which they have in their minds, the institute plans, as an important part of its work, to put an adequate picture in builders' and architects' minds as regards the value of steel as a material of construction.

THAT steel treaters are eagerly in quest of practical information was strikingly shown at the November meeting of the New York chapter last week, with its unique symposium on alloy steels

as reported on other pages. The attendance was the largest since the organization of the chapter. While much of the information given out by the six experts—all New York men but one—was familiar to some of those present, even the most experienced was amply rewarded. Similar monthly meetings are held in a chain of cities, stretching from coast to coast, the sum total of the movement, both in attendance and in metallurgical output, making it fairly phenomenal. These chapter activities, in view of their informality and the practical character of the addresses, have been invaluable to the younger practitioners. There is no mystery, therefore, about the enthusiasm that has borne the American Society for Steel Treating from one success to a still greater one in successive annual conventions.

Accident Increase in Busy Times

EXPERIENCE seems to have demonstrated that industrial accidents increase in number as plants get busier and that they diminish as business falls off. Some observers maintain that the contrary is true, that when times are dull morale lets down and men and women grow more careless. But industrial records bear out the first statement, and a good illustration is the unique, long-continued Worcester experiment.

In this Massachusetts city the local safety council conducts what is known as the lost-time accident contest, in which close to 50 plants, employing a total of more than 25,000 persons, are competitors. The list takes in plants small and large, among them the great Worcester works of the American Steel & Wire Co., the Norton Co., the Wickwire-Spencer Steel Co., the great textile machinery builders of Central Massachusetts, large textile mills, public utilities, machine tool establishments, and a number of pressed and stamped metal concerns.

Each month every plant reports its average number of employees, the number of accidents and the time lost because of them. The loss of even one day's time counts as an accident. These items are resolved into percentage of accidents to the number employed, and the number of lost-time days per 100 employees. At the end of each year the firms are ranked on their twelve months' standing. As the contest has been in progress for years, the variation of percentages from month to month and from year to year may be compared with some one of the measures of general manufacturing activity, as pig iron production, to determine the relation of manufacturing activity and accident rate.

The Worcester experience is that accidents increase as plant activities increase. For example, the record of the plants included in the contest will not be so good this year as last, excepting perhaps in the matter of fatal accidents, to judge from the returns for the first ten months. Similarly, the percentage of accidents fell with the arrival of the last depression.

In considering this particular test it should be kept in mind that the contest has been a real one. Managements have kept up their keenness. They are jealous of the good name of their works, as the list appears monthly in the daily press of the city. Therefore, if the accident rate increases it is in spite of a determined, persistent effort to keep it down.

It is not surprising that when dull business is succeeded by ample orders men's minds concentrate on production and other factors receive scant attention. Owners, superintendents, foremen, workers are alike in putting production first. A serious accident, the death of a workman or a terrible injury has occasionally brought a plant to its senses. In some other works, managers have not overlooked the element of increasing hazard and have initiated fresh and vigorous safety campaigns, reviving half-forgotten rules, ordering them enforced and inflicting drastic penalties for violations. A few days' drive will bring back the old safety spirit. The string of accidents which sometimes comes when men grow careless or absent-minded is highly demoralizing to workers who have become accustomed to feeling safe.

"Normal" Steel Production

OF wider interest than the question of our steel making capacity is that of what normal production would be, were there such a thing as normal. The capacity is of strategic interest to buyers and sellers of steel, in their opposed positions, but production constitutes one very important index to the general industrial and building activity of the country.

As a contribution to the study of production some figures are given below. The pre-war period no longer counts, and the war period never really counted as a reference to natural conditions. We are now completing the seventh year since the war. The monthly rate of steel ingot production has been studied, counting the months in the categories named below, with results as shown:

Count of Months, January, 1919, to October, 1925, Inclusive

Daily Rate of Ingot Production, Tons	Number of Months
Under 100,000	23
100,000 to 110,000	7
110,000 to 120,000	6
120,000 to 130,000	11
130,000 to 140,000	20
140,000 to 150,000	7
150,000 to 160,000	6
Over 160,000	2
Total months	82

Without attempting to discover "normal," because there would be disagreement as to what "normal" means, one may say that a daily ingot producing rate between 130,000 and 140,000 tons is the most familiar. Such a rate prevailed almost one-fourth of the time; but there was a lower rate 57 per cent of the time and a higher rate only 18 per cent of the time. The average rate during the entire period of six years and ten months was a trifle under 115,000 tons; but we see that the rate was more often above that than below it. That is, there were 30 months with a rate under 110,000 tons, six months with a rate between 110,000 and 112,000 tons and 46 months with a rate over 120,000 tons. Thus the conception by point of time is different from the conception by the mere arithmetical average.

The rate last month was 144,183 tons. In the preceding 81 months there were only 14 months that showed a rate above 140,000 tons, i.e., only 17 per cent of the time.

What the economist considers normal is, of course, a definite thing to him, being the measure of the trend at the moment and determined by a balancing of the fluctuations of the past. In the case of steel, the records show an increasing consumption as the years go by, a consumption mounting at a faster rate than the population. For a given period of years, the total of the varying annual amounts of steel consumed may be equalled, say, by calculated annual figures increasing in regular steps. Then the new figure for each year would represent the apparent theoretical needs of that year and stand, in statistical language, as the normal.

Obviously with a commodity, like steel, entering into the arts at a rapidly expanding rate, the normal of a few years ago is considerably different from that of today. Such a normal, as ascertained from steel production figures to date, was about 113,500 tons per day in 1919, while it is 137,000 tons in 1925. Theoretical needs thus increased 20 per cent in the interval, though population increased perhaps only 9 per cent.

The interesting fact here, however, is that the above grouping of the monthly production figures happens to give by a common sense deduction the approximate normal for the present moment—that is, for the period taken, an output between 130,000 and 140,000 tons is shown more often than outputs above and below that range, as against a mathematically determined normal of 137,000 tons.

COMMONLY alloying metals are introduced into steel either as simple metals or as ferroalloys. Nickel and copper are examples of the former and manganese, chromium, vanadium and tungsten represent the latter method. Molybdenum was originally used as ferromolybdenum, but in the past year this alloy has disappeared and a salt of molybdenum, calcium molybdate, is now being used exclusively. It is easily and cheaply prepared and contains no carbon. Another advantage, as indicated in the article on another page, is the assimilation of the molybdenum in its nascent state by the steel. Also the ample supplies of the metal in this country favor its broader use. As with vanadium its introduction has been slow, but marked progress has been made this year, the consumption in 1925 being nearly five times that of 1924. There is the interesting possibility that a similar method will be perfected for some of the other metals now used as ferroalloys. Applied to chromium it would solve the stainless iron problem as well as some others where the presence of carbon is a handicap.

October Bookings of Commercial Steel Castings Highest Since February

WASHINGTON, Nov. 23.—Bookings of commercial steel castings totaled 61,044 tons in October, according to reports received by the Bureau of the Census from producers with more than two-thirds of the commercial castings capacity of the country. This was 60.8 per cent of shop capacity and compares with 48,827 tons in September, or 48.6 per cent of shop capacity. The October figure is the highest since February.

Of the October bookings, 20,576 tons were for railroad specialties, representing 47.9 per cent of this class of capacity. Miscellaneous bookings in October amounted to 40,468 tons, or 70.5 per cent of this class of capacity. Total bookings during the 10 months ended with October of the present year were 576,708 tons, as against 602,456 tons for the corresponding period of last year. Bookings of castings for railroads during the 10 months of 1925 were 220,317 tons, as against 293,682 tons; while respective figures as to miscellaneous castings were 356,391 and 308,774 tons.

H. C. Wickline Heads Pittsburgh Purchasing Agents

H. C. Wickline, purchasing agent Union Steel Casting Co., Pittsburgh, was elected president of the Purchasing Agents' Association of Pittsburgh at its annual meeting recently. He was also elected national director and as such will represent the Pittsburgh body at the annual convention of the National Association of Purchasing Agents in Los Angeles in June, 1926. Mr. Wickline is chairman of the iron and steel committee of the National Association which has in charge the standardization of scrap and is now working out a standard form of scrap contract. Mr. Wickline has been identified with the Union Steel Casting Co. for almost 25 years, and most of that time has been in charge of its purchases.

Other officers of the Pittsburgh Association are: F. H. MacKnight, Westinghouse Airbrake Co., Wilmerding, Pa., first vice-president; A. Davia, Dravo Contracting Co., Pittsburgh, second vice-president; G. H. Beymer, Standard Underground Cable Co., Pittsburgh, third vice-president; J. E. Nieser, Hillman Coal & Coke Co., Pittsburgh, treasurer; A. D. Feeman, Superior Steel Corporation, Pittsburgh, secretary; directors, Fred K. Acker, Mackintosh-Hemphill & Co., Pittsburgh; J. B. Connally, Mesta Machine Co., Pittsburgh; C. H. Hindfuss, Pittsburgh Screw & Bolt Co., Pittsburgh; W. H. Bechtold, Iron City Electric Co., Pittsburgh; C. F. Keib, American Spiral Spring & Mfg. Co., Pittsburgh; C. G. Bunnell, Westinghouse Electric & Mfg. Co., East Pittsburgh; H. J. Casper, Pittsburgh Gage & Supply Co., Pittsburgh; W. J. Green, United Engineering & Foundry Co., Pittsburgh; W. McC. Reynolds, Pittsburgh Water Heater Co., Pittsburgh; K. F. Tiegel, Pittsburgh Piping & Equipment Co., Pittsburgh; Pittsburgh director National Association, Gerald H. Moses, American Window Glass Co.

Bethlehem Merger Case Hearings in Baltimore

BALTIMORE, Nov. 24.—Hearings on the complaint of Federal Trade Commission in the Bethlehem Steel Co. merger case were resumed here yesterday. Present indications are they will continue here throughout the present week and possibly a little longer. After that it is the tentative plan to transfer them to Pittsburgh to last a week or so at that point. Next the hearings will be held in Washingon, where the commission will close its side of the case. Witnesses who testified subsequent to those mentioned in THE IRON AGE of last week and previous to the resumption of testimony yesterday included Andrew J. Dietrich, steel fabricator and jobber, Baltimore; Albert Glendyke Harkins, member of the fabricating and jobbing firm of the Maryland Steel Products Co., Baltimore, and William G. Wetherall, steel jobber, Baltimore.

Riverside Pipe Works Idle

The National Tube Co. has blown out the two blast furnaces at its Riverside works, Benwood, Wheeling, W. Va., and that plant now is entirely idle. It stopped making pipe there several weeks ago, but until last week continued the operation of the coke ovens, blast furnaces and skelp mills. This plant for several years has been used chiefly as an emergency unit and its suspension, it is officially stated, does not mean formal abandonment of the plant. The company has its Gary plant available for pipe production and is adding to capacity at Ellwood, Pa., and Lorain, Ohio.

JAPAN BUYS TIN PLATE

American and Welsh Makers Take Order—American Importers Quoting on Steel

NEW YORK, Nov. 24.—European mills and particularly British makers, continue to cut in on business in the Japanese market. The inquiry of Yokohama, Japan, for 350 tons of I-beams, on which either American or British standard specifications were stated to be acceptable, was placed through the Mitsubishi Shoji Kaisha with a British maker, reported to be Dorman, Long & Co., at a price said to be $9 under the American c.i.f. price. The tin plate for the Nippon Oil Co., 30,000 base boxes, was doubled and placed with two exporters, each taking 30,000 boxes. Mitsui & Co. will furnish 30,000 boxes of Welsh tin plate, the quoted price reported to have been about $7.98 per box, including all extras, c.i.f. Japan, or about 9c. per base box less than the American mill quotation. Iwai & Co., New York, recipient of the other 30,000 boxes, quoted on furnishing American tin plate. The American export market on tin plate today, covers a fairly wide range of prices, depending upon how well the various American makers are booked with tonnage. A fair estimate of the market would range from $5.55 per base box to $5.80 per base box, c.i.f. Japan.

The light gage black sheet market is quiet with Japanese demand at a low ebb and prices fairly firm at $83 to $84 per ton, c.i.f. Japan. No new inquiries for rails are reported from Japan and the 1500 ton lot for the Imperial Government Railways is still pending. A small order for 122 sections of 90-lb. rails and splice bars was recently placed with Suzuki & Co., New York, by the Government railroads. This same exporter recently booked an order from Japan for about 2000 boxes of tin plate seconds.

The Chinese markets continue quiet with only occasional small orders for tin plate waste waste, wire shorts and similar second hand materials. Chinese interest in copper has lately been confined to inquiries for lots of 50 tons or less with no purchases noted. European mills maintain a strong competitive front in South and Central American markets.

American importers of European steel are quoting on numerous inquiries for all kinds of material and are beginning to offer a wide range of steel products instead of confining themselves almost exclusively to efforts to sell American consumers of rails, structural steel and reinforcing bars. None of the large tonnage inquiries, which have been before the import market for some time, is reported by those interested to have been closed as yet.

That importers of European steel products are in a position to quote competitive prices seems evident from offers to quote on German material, either Bessemer or open-hearth being available on most products. For example: Billets and sheet bars, of Thomas steel, are quoted at $33.70 per gross ton, c.i.f. duty paid, which compares with the present American mill quotation of $35 per ton, Pittsburgh. Wire rods, No. 5 American Steel & Wire Co. gage are offered at $39.70 per gross ton, c.i.f., duty paid, which compares with the American mill price of $45 per ton, Pittsburgh. Open-hearth bars, S.A.E. specifications, are offered at 1.90c per lb., c.i.f., duty paid, against American soft steel bars at 2c. per lb. Pittsburgh or 2.34c per lb., delivered, New York. A slightly greater disparity of prices is evident on galvanized barbed wire, offered in American types and quoted at 3c. per lb., c.i.f., duty paid, against the American price of 3.35c per lb., Pittsburgh, or 3.69c per lb., delivered New York. Reinforcing bars of intermediate grade Bessemer are quoted at about 1.95c per lb., c.i.f., duty paid.

Claire Furnace Cost Fishing Case Before Supreme Court

WASHINGTON, Nov. 24.—Rearguments were made today before the Supreme Court of the United States in the Claire Furnace Co. case. This is a proceeding begun several years ago when the Federal Trade Commission attempted to obtain figures as to costs, production, shipments, etc., from the Claire Furnace Co. and 18 other iron and steel interests. The manufacturers declined to submit the information to the commission, claiming that it had no jurisdiction. The Supreme Court of the District of Columbia and the Court of Appeals here upheld the iron and steel interests, which obtained an injunction restraining the commission from getting the data wanted. The argument for the commission today was made by Solicitor-General Mitchell while the iron and steel companies' side was presented by Attorney Paul Cravath, New York.

Employment Gains in Metal Trades

Reports to the National Metal Trades Association from 839 metal working shops in New England, New York, Pennsylvania, Ohio, Indiana, Michigan, Illinois, Wisconsin, Iowa and Missouri, showed a total of 637,160 employees on the payroll in October, as compared with 617,768 in September. Employment has gained steadily in the past six months. In August the total enrollment for the reporting shops was 597,376, in July 588,782, and in June 584,965.

Industrial Preparedness Meeting

Industrial preparedness as insurance against war will be discussed at a meeting on Industrial Cooperation with the War Department, to be held Friday evening, Dec. 4, at the Engineering Societies Building, New York. The meeting will be held under the auspices of the Army Ordnance Association, and leading mechanical, chemical, civil, electrical, mining and metallurgical and automotive engineering societies. E. H. Gary, chairman of the Board of the United States Steel Corporation and chairman of the advisory board of the New York ordnance district, will preside, and the speakers include the Hon. Dwight F. Davis, secretary of war; the Hon. Hanford MacNider, assistant secretary of war; and Gen. James G. Harbord, president of the Radio Corporation of America. Col. Frank A. Scott, president of the Warner & Swasey Co., Cleveland, and chairman of the National defense division of the American Society of Mechanical Engineers is chairman of the committee on arrangements.

To Forward New England Power and Industrial Development

The New England Conference at Worcester, Mass., Nov. 12 and 13 brought together hundreds of representatives of all branches of industry, trade and commerce in the six States of the territory, chiefly through delegates from associations and chambers of commerce, and resulted in the establishment of a permanent body to be known as the New England Council, consisting of 12 members from each of the States, carefully chosen that all basic interests might be included.

Among the members best known in the metal-working industries are Henry D. Sharpe, treasurer Brown & Sharpe Mfg Co., Providence, R. I.; Howard Coonley, president Walworth Mfg. Co., Boston, and Stanley H. Bullard, vice-president Bullard Machine Tool Co., Bridgeport, Conn. The sessions had as a leading topic the power of New England and its development, the keynote being struck in an address by Owen D. Young, chairman of the board General Electric Co., who urged the pooling of all the power in the territory, comprising both hydraulic and steam plants, large and small, into one vast system, covering New England with a network of transmission lines. Especially did Mr. Young dwell on the breaking down of barriers which prevent the importing of electric current from one State into another, meaning Maine, which has great water resources that cannot be developed because power cannot be exported. Bearing on the Maine situation is the titanic Bay of Fundy project, still in the paper stage.

Bronze Welding of Cast Iron Pipe

Discussed at Convention of Acetylene Association—Other Gas Welding and Cutting Operations Also Prominent in Program—Officers Elected

BRONZE welding of sand cast and centrifugally cast iron pipe was an outstanding topic on the comprehensive program of the twenty-sixth convention of the International Acetylene Association held at the Congress Hotel, Chicago, Nov. 18, 19 and 20.

Although the bronze welding of cast iron and steel has been recognized as a commercial process for a few years only, it was brought out by Arthur R. Lytle, Union Carbide & Carbon Research Laboratories, Inc., Long Island City, N. Y., in a paper on the "Effect of Heat of Bronze Welding on Cast Iron Pipe," that the process has developed in that time from a little-known novelty to a widespread and much relied-upon method of uniting metals. The most important application of the process was said to be in connection with cast iron welding, particularly in the construction of iron pipe lines, although its applications are spreading to a wide variety of general repair work.

The most notable advantages in bronze welding of cast iron pipe as compared to welding with the cast iron welding rod, were said to be, first, the shorter time required for the weld, and second, the lower temperature at which the welding proceeds. The last named advantage permits the welding to be done successfully on unpreheated sections, as the contractions of the weld and base metal are slight and the stresses set up by the cooling may be absorbed by the ductile bronze. An advantage stressed as all important was that the strength of the bronze is greater than that of the cast iron.

Process Advantageous for Centrifugally Cast Pipe

It was pointed out that the bronze welding of cast-iron pipe has become an art separate from all other bronze welding processes, many miles of bronze welded sand cast and centrifugally cast pipe having been successfully laid. The centrifugally cast type, said Mr. Lytle, seems to have come into its own for bronze welding, because the material is of more compact structure and more uniform strength, and also stronger than the sand cast iron pipe, it is possible to use thinner walled pipes than previously. The thinner gage materials lend themselves much more readily to welding than to other means of uniting.

Of the failures in bronze welded pipe lines, at the bronze weld and some distance from it, Mr. Lytle confined his discussion of causes to the theories that depend on the structural changes that occur in the cast iron pipe due to the heat of the application of the bronze. A number of such welds have been investigated by Mr. Lytle's company and a description of their work and findings interestingly set forth in the paper, which was illustrated by lantern slides. A study of the cast iron welding of cast iron pipe was included in the investigation, as it was thought that the information would be valuable and that the broader field of work would facilitate the elucidation of the various structur-

The difference between the sand cast and centrifugal cast pipe was outlined, the illustrations including a specimen of French sand cast pipe that had failed. After a consideration of all the changes that have been observed to occur in cast iron pipe when welded with cast iron and bronze, Mr. Lytle said, in conclusion that the following was thought to be true:

1. Neither cast iron nor bronze welding of the usual cast iron pipe has any detrimental effect on the structure of the base metal.
2. It is possible that in cast iron very high in phosphorus, the bronze welding operation may weaken the material sufficiently to lead to failure, though this is doubtful.
3. Inasmuch as both cast iron and bronze welding make the material at that point stronger, it is natural that many of the failures should occur just outside these altered areas.
4. It may well be that some of the failures that have occurred have been the result of surface cracks or defects in the original metal. The influence of these defects may be emphasized by the welding operation.

Scientific Control of Welding Operations

Procedure control which might be profitably employed by manufacturing plants and field organizations for the supervision and advancement of their production methods were outlined in a paper on "Procedure Control in Welding," by L. E. Ogden, vice-president of the Oxweld Acetylene Co., New York. The procedure discussed was based on a set of fundamental principles formulated by the affiliated companies of the Union Carbide & Carbon Corporation, these principles being stressed as adapted to any application of welding, although of greatest aid for applications involving repetitive operations.

The procedure controls are designed not for the welder, but for those in charge of and directing the work. The specifications of such procedure control were grouped under the following heads: 1, A check on the welders; 2, selection and inspection of material; 3, design and layout of the welding joint; 4, preparation of the piece for welding; 5, welding technique, including organization; and 6, inspection of welding and testing of the completed joint. Each of these subdivisions was discussed. The peculiarities of each individual problem should first be studied, and the procedure control written with these problems in mind. It was pointed out that good welding comes only from an organization, which as a whole, sincerely believes in welding.

Another paper of broad interest was that on "Surveying an Industrial Plant and the Installation of Oxygen and Acetylene Piping" by W. A. Slack, president Torchweld Equipment Co., Chicago. Oxygen and acetylene piping has failed in many instances because of improper design and construction, said Mr. Slack. Too many pipe lines have been put in without due consideration being given to the physical limitations of the plants where they were installed. Pipe capacity is an important consideration and is often the direct cause of failure for a pipe line to give satisfaction. He recommended that wrought pipe be used because of its rust resisting qualities, and that all joints be welded as an assurance against leakage.

Oxy-Acetylene Cutting Helps Foundry Operation

The part which acetylene and oxygen plays in the manufacture of steel castings was reviewed comprehensively by R. W. Thomas, superintendent of steel foundry, Vulcan Iron Works, Wilkes-Barre, Pa., in an address on the "Influence of Oxy-Acetylene Cutting on Steel Foundry Practice." It was pointed out that the use of the torch has practically eliminated the necessity for the alteration of designs simply to facilitate the placing and cutting off of gates and risers, and that with the torch available for their removal, risers of any number and size can be used and the cost of cutting them off is far less than by other methods. Oxygen and acetylene with their necessary tools and equipment were said to have been instrumental in decreasing the time required to produce a given tonnage, to have improved the quality of castings, reduced the percentage of defective castings, save expensive crane equipment and permit of greater liberties in designing steel castings.

Failures in welded joints can practically always be traced to improper welding, according to J. B. Johnson, chief, materials section, Engineering Division United States Army Service, Dayton, Ohio, who contributed a paper on the "Welding of Carbon and Alloy Steel Tubing for Aircraft." The most common cause of fail-

ure is the improper fusion of one of the parts which is welded. The welding rod is generally fused properly and is flowed on the metal to form a seam which on the surface looks entirely satisfactory. The application of a load, however, causes failure, and a subsequent examination will show that there was no fused bond between the added metal and the part. It was also emphasized that many cases of failure have been due primarily to improper design rather than to bad welding. It is well known that a welded seam is weak under transverse loading, especially if there is also some impact. All such joints should be reinforced to prevent concentration of stress at the edge of the seam where the metal is generally least able to resist any deformation.

Other papers included "Acetylene, Beacon of Progress," by E. E. Thum, manager of the publicity department of the Linde Air Products Co., New York and "Using the Literature of the Oxy-Acetylene Industry," by F. E. Rogers, publicity manager, Air Reduction Sales Co., New York. Several papers were on topics relating to the use of acetylene on the farm and in mine lighting. Reports were made by several of the associations committees and social activities included a theater party and the annual banquet.

New Officers

Officers elected for the ensuing year were: President, R. Sossong, Air Reduction Sales Co., 342 Madison Avenue, New York; vice-president, W. A. Slack, Torchweld Equipment Co., Chicago; secretary-treasurer, A. C. Morrison; directors, J. A. Johnson, Crawfordsville, Ind., and W. D. Flannery, K.-G. Welding & Cutting Co., New York. Directors whose terms did not expire this year are: D. C. Duncan, Carbic Mfg. Co., Duluth, Minn.; Prof. A. S. Kinsey, Stevens Institute, Hoboken, N. J.; E. L. Davis, Cleveland, and H. S. Smith, Prest-O-Lite Co., 30 East Forty-second Street, New York.

ACCIDENT PREVENTION

Its Importance as a Business Investment Stressed at Safety Conference

Accident prevention work as a business investment was stressed at the meeting of the New York Safety Conference at the Engineering Societies Building, 29 West Thirty-ninth Street, New York, on Wednesday, Nov. 18. The speaker who laid particular emphasis on this phase was A. L. Dickerman, vice-president American Car & Foundry Co., 165 Broadway, New York. The meeting was held under the joint auspices of the American Society of Safety Engineers, the American Society of Mechanical Engineers, the American Society of Civil Engineers, the American Institute of Electrical Engineers and the American Institute of Mining and Metallurgical Engineers.

Mr. Dickerman said that accidents take a toll of 86,000 lives annually in the United States and that figuring each life at an economic worth of $25,000 the total loss is $2,150,000,000. In addition there are each year about 2,000,000 workers permanently or temporarily disabled whose time at $4 a day, if an average of 30 days' disablement is figured for each one, would aggregate $2,390,000,000 in earning power.

Much of this loss is preventable, said Mr. Dickerman, and he cited the experience of his own company to prove it. The American Car & Foundry Co. has expended $1,000,000 in safety work in 14 years and from this investment has saved $2,700,000 as shown by reduction in liability and compensation payments. He also gave similar figures relating to the safety work of the United States Steel Corporation, which expended $9,763,063 in the 11 years from Jan. 1, 1912, to Sept. 30, 1922, and thereby gained $14,609,920.

Mr. Dickerman said that in each of the plants of the American Car & Foundry Co. there is a safety engineer and a committee on safety consisting of five shopmen. The personnel of this committee is changed frequently so that a considerable number of men are imbued with ideas of safety education.

The conference had an all-day program extending into an evening session and several papers relating to safety work in various industries were read. The topic was introduced by C. B. Auel, Westinghouse Electric & Mfg. Co., East Pittsburgh, former president of the National Safety Council. J. G. Walber, vice-president in charge of the personnel division, New York Central Railroad, discussed "Organization and Its Work in Accident Prevention;" C. E. Skinner, director of standardization Westinghouse Electric & Mfg. Co., had as his topic, "Engineering Standards and the Safety Movement;" E. A. Holbrook, dean of School of Mines, Pennsylvania State College, State College, Pa., talked on "Safety Education in Schools and Colleges;" S. W. Ashe, educational department General Electric Co., Pittsfield, Mass., talked on "Prone Pressure Method of Resuscitation;" J. V. W. Reynders, president American Institute of Mining and Metallurgical Engineers, on "Safety in Mines," and John W. Lieb, vice-president New York Edison Co., New York, on "Standardization and Safety."

Copies of the more important papers have been preserved in mimeograph form and are obtainable from the National Safety Council, 168 North Michigan Avenue, Chicago.

Savings Made Through Motion Study

An interesting application of motion study, resulting in marked increase in production and lower unit costs, was given by Joseph Piacitelli, Barber Asphalt Co., Maurer, N. J., in a paper on "Recent Developments in Motion Study," which was presented at a meeting of the Metropolitan section of the Taylor Society, held at the Town Hall Club, New York, Nov. 19. The earnings of workmen were increased, working conditions were made more comfortable and the labor turnover considerably decreased.

The application discussed was in the making and shipping of asphalted roofing shingles at the Maurer, N. J., plant of Mr. Piacitelli's company. The particular work outlined related to folding, packing and shipping operations. In the discussion, the necessity of first training the worker in the fewest and most effective motions for accomplishing a given operation before expecting high speed output was stressed. On this, Mr. Piacitelli said that it was their practice to give the man the best method first, and that speed of work comes along later, by giving the worker the incentive, such as less fatiguing conditions and the opportunity for increased earnings. The correct method is written down in detail on instruction sheets, the proper motions being made simple and in proper sequence so that automaticity may be obtained by the worker as early as possible. The foreman teaches the correct method to new workmen. The savings in labor from this application of motion study was said to amount to four times the cost of the motion study work.

Louisville & Nashville Buys Lathes

The Louisville & Nashville Railroad has purchased four 36-in. lathes from the Niles-Bement-Pond Co., New York. The latter company has received the following orders: 96-in. planer from the Cleveland Punch & Shear Co., Cleveland; 16-in. shaper from the Paine Co., Chicago; a combination journal turning and axle lathe from the Chicago & Eastern Illinois Railroad; a 15-in. lathe from the Pacific Electric Clock Co., Berkeley, Cal.; a grinding machine from the North Shore Cutting Die Co., Lynn, Mass.; an 1100-lb. hammer for the Missouri Pacific Railroad; three 22-in. drills for the Boston Elevated Railway Co., Boston; a 50-ton, 58-ft. 6-in. span crane and a 20-ton, 58-ft. 6-in. span crane from the Elliott Co., Jeannette, Pa.

Late Developments in Alloy Steels

Experts Discuss Characteristics and Problems Before New York Steel Treaters

SUCCESSFUL and interesting in an outstanding way was a meeting which the New York chapter of the American Society for Steel Treating held Wednesday evening, Nov. 18, in the assembly room of the Merchant's Association of New York in the Woolworth Building. It was the third of a series of meetings dealing with practical problems in the steel industry. The first one, held in September, dealt with the manufacture of steel. At the second the production of ferroalloys was discussed by an authority.

At the November meeting last week the feature was a thorough discussion of the general field of alloy steels with special reference to problems in their manufacture and inspection, the properties which fit them for special service, and the precautions necessary in their working and heat treatment. The speakers for the various alloying elements were as follows:

Vanadium.—George L. Norris, Vanadium Corporation of America, New York.

Nickel.—Charles McKnight, Jr., International Nickel Co., New York.

Molybdenum.—John D. Cutter, Climax Molybdenum Co., New York.

Chromium.—C. E. MacQuigg, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

Manganese.—John H. Hall, Taylor-Wharton Iron & Steel Company, High Bridge, N. J.

Tungsten.—A. H. Kingsbury, Crucible Steel Co. of America, New York.

Chairman Rinek, who presided, emphasized the fact that it is seldom possible to assemble at one meeting so many well known authorities on the various types of alloy steel. Each speaker was allowed 15 min. in which to present his views and a brief general discussion was participated in after the last speaker.

George L. Norris, chief metallurgist of the Vanadium company, delivered a brief history of vanadium and discussed some of the various alloy steels which are produced from its use. He also dealt with some phases of the heat treatment of these steels.

Charles McKnight, Jr., metallurgist in the research department of the Nickel company, briefly outlined the role of nickel in both steels and special alloys, discussing the manufacture, properties and heat treatment of plain nickel steels and the combinations with other alloys, and outlined also the importance of nickel in special high-nickel alloys, such as invar and permalloy.

John D. Cutter, metallurgist Climax Molybdenum Co., presented the case of molybdenum from its early history and declared that its use had expanded to very large proportions, particularly during the last year. The most interesting new development which he discussed was the fact that within a year the use of ferromolybdenum had been abandoned. Instead of introducing molybdenum into steel by means of a ferroalloy, this is now entirely accomplished by the use of calcium molybdate. The ore, after grinding, concentrating and roasting, is mixed with lime and water, the resulting product after thorough drying being the salt referred to. When this is added to the steel bath, disintegration takes place at once, the lime going into the slag and the iron and steel bath decomposing the molybdenum oxide with the molybdenum liberated for alloying with the steel. The fact that the molybdenum by this method is virtually in the nascent state was emphasized as a particular advantage over the method of introduction of any other alloy into steel.

C. E. MacQuigg, metallurgist, who was asked almost at the last moment to take the place of W. J. Priestley, sales metallurgist of the Electro Metallurgical Sales Corporation, New York, briefly outlined the various familiar chromium steels, including the so-called engineering steel, stainless types and the high chromium iron alloys. Some of the special uses of the high-chromium types were dwelt upon, particularly their resistance to high temperatures and their growing use in the chemical industry. He referred particularly to the recent development of a steel which contains 2.50 per cent chromium and which has remarkable shock resistance properties. He believed this would be an important factor in certain future developments.

John Howe Hall, metallurgist, presented in an interesting manner some of the claims for manganese. He characterized manganese as the most unique alloying element because it was impossible to make steel without manganese and also because it is the cheapest of these alloying agents. He paid particular attention to some of the recent developments in various steels containing 1 to 1.50 per cent manganese, discussing the special uses to which they are put and the simplicity of their heat treatment. He felt that not enough credit has been given to this class of steels. He touched briefly upon the high manganese or Hadfield steels. He predicted that a steel containing about 2.50 per cent manganese would gain wide use and recognition because of its unusual properties.

A. H. Kingsbury, sales metallurgist, discussed briefly the various tungsten steels, comparing the low with the high tungsten products, touching on their constitution and heat treatment and outlining some of their special uses.

Discussion

In the limited time devoted to general discussion, the various speakers answered miscellaneous questions. One point on which information was requested had to do with the so-called silicon structural steel. This steel contains about 0.25 per cent of silicon and close to 1 or more per cent of manganese. The question was raised whether this should not be classed as a manganese steel. It was explained that originally this steel had been made containing around 1 to 2 per cent silicon, but this composition was finally changed to the one now prevailing. It was suggested that the name of high tensile structural steel would really be more appropriate.

The attendance at the meeting was close to 200 and about 45 members and guests sat down at the informal dinner which was the largest yet held by the chapter.

At the next monthly meeting, Dec. 16, the "Flow of Metal in Forging" will be discussed by John H. Nelson of the Wyman-Gordon Co., Worcester, Mass.

Machinery Exhibit at Sesquicentennial Exposition

A large machinery exhibit will be a feature of the Sesquicentennial International Exposition which will be held in Philadelphia from June 1 to Dec. 1, 1926, to celebrate the 150th anniversary of the signing of the Declaration of Independence. The exhibit will be housed in the Machinery, Engineering, Mines, Metallurgy and Transportation Palace, a building which will be 1886 ft. long by an average of 400 ft. in tapering width. It will cost approximately $1,250,000.

The Diesel engine exhibit, it is said, will be the largest and most comprehensive ever shown. A large number of hydraulic machinery manufacturers will show presses used in steel plants and railroad shops, such as various types of wheel presses, forging, stamping and drawing presses. Steel makers will show every phase of their industry from the mining to the production of the finished product. The burning of powdered coal will be the main feature of the exhibits of a number of boiler and mechanical stoker manufacturers. Makers of transmission machinery and equipment will have a large display.

NEW DUPLEXING PROCESS

Ford Motor Co. to Use Blast Furnaces and Electric Furnaces in Conjunction

The Ford Motor Co. will utilize two 15-ton Heroult electric furnaces, recently purchased from the American Bridge Co., in a new duplexing process by which hot metal will be run from the blast furnaces into a mixer and then into the electric furnaces, where it will be retained at a high and even temperature to be poured as required into molds for the making of cylinder blocks. The function of the electric furnaces will not be for refinement of the iron but merely to maintain the temperature of the metal at the desired point.

If the plan is found to be commercially practicable, all of the cylinder blocks made by the Ford Motor Co., now numbering about 10,000 a day, will be made in this way and additional electric furnaces will be required.

Ford engineers have for some time been working on methods for direct pouring of castings and this is the plan that has finally been developed after extensive experiments. A similar idea has been followed elsewhere in duplexing with a cupola, but so far as known this will be the first attempt to use this method direct from a blast furnace.

The Heroult furnaces are to be installed at the River Rouge plant, where there are two modern blast furnaces, and will be ready for operation in about five months.

BARB WIRE SUBSTITUTE

German Perforated Hoop Iron in Extended Form Produces Barbed Material

Barbed band, a stamped metal product intended for use in place of barbed wire, has been brought out recently by Otto Wolff & Co., German steel makers, with an American office at 139 Broadway, New York. Punched from hoop iron of about No. 16 gage and 2 in. wide, the perforation or slitting is such that, although the original form of the stock remains, no barb protruding, a length of either single or double barbed wire is produced by pulling the band until it is fully extended. The accompanying illustration of samples of single barbed and double barbed band partly extended shows the original form and the result after the band has been pulled out to its full length. For extending the band a plain metal handle and clamp is furnished.

Shipped in rolls before extension, the maker claims compactness and smoothness in handling. Although it is said that the present cost of production is $9 to $10 per ton more than the cost of producing barbed wire, the delivered price is lower, two factors being mentioned as contributing to the decrease in expense. It is claimed also that the extended barbed band weighs less per foot than wire. Closeness of the barbs is regarded as a feature of the new product.

Double barbed bands are made by punching hoop iron of the same gage, but about 3 in. wide. The maker is recommending the use of the double-barbed material for the tops of walls and fences.

Committee to Standardize Refractories for Foundry Use

A joint committee which will investigate refractories for foundry use with the purpose of simplifying and standardizing specifications was organized recently at a meeting held at the Mellon Institute, Pittsburgh. L. C. Hewitt, chairman committee on cooperation, American Ceramic Society, was elected chairman of the joint committee and J. L. Cummings, secretary refractory committee, American Foundrymen's Association, was made secretary.

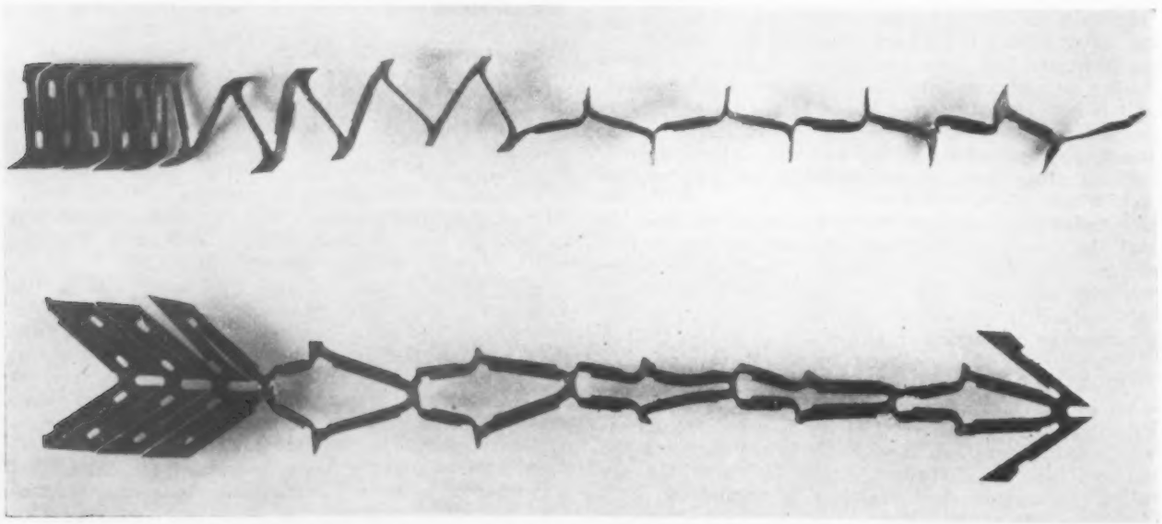
Other organizations represented at the conference included the American Refractories Institute, the Steel Founders Society of America, the Electric Steel Founders' Research Group, and the Division of Simplified Practice, Department of Commerce. Additional bodies which are expected to participate in the work of the committee are the United States Bureau of Standards, the Bureau of Mines, the American Electrochemical Society, the American Malleable Castings Association, the American Society for Testing Materials and the Institute of Metals Division of the American Institute of Mining and Metallurgical Engineers.

Of the foregoing purchases more than $11,000,000 of the total was placed during the second half of the fiscal year. It is claimed by the Amtorg company that a large portion of this business was transacted on a credit basis ranging from 90 days to a year or more, the average, in which would be included purchases on a cash basis, being, it is claimed, about six months.

Iron, Steel and Machinery Sales to Russia Total $17,000,000

Purchases of machinery and metal equipment made by the Amtorg Trading Corporation for export to Russia, during the fiscal year ended Oct. 1, 1925, totaled close to $17,000,000. In round numbers these purchases were classified as follows:

Metals	$1,240,000
Automobiles	1,062,000
Industrial equipment and general machinery	4,500,000
Agricultural machinery	3,932,000
Tractors	3,900,000
Oilwell supplies	1,334,000
Dredges	1,200,000
Typewriters, adding machines, etc.	675,000



Strips of Hoop Iron Are Punched as Shown at the Left, and When Extended, Form the Barbed Material Seen at the Right

IRON AND STEEL CAPACITY

Practical Basis of Inquiry of Institute's Special Committee

That essentially practical capacity is aimed at by the special committee of the American Iron and Steel Institute now canvassing the industry on the question of the country's potential production is indicated by a study of the blanks which have been distributed. In the case of steel ingot capacity and steel castings capacity each plant is asked to give its greatest actual output for the first half of any year since 1915, also its best six months' output for a last half. Against these figures are to be put an estimate of annual capacity for a whole year of maximum demand, assuming adequate transportation service and no serious labor shortage. Presumably such estimate will not take precedence over the total of the best two half years without an adequate explanation, such as increased plant and improved methods.

In the pig iron questionnaire information is asked as to the highest month's production since 1915, and also both the greatest production for any six consecutive months and that for any calendar year since Jan. 1, 1916. The showing of these actual figures may be increased, as in the case of steel, by estimates of producing capacity at the present time, to provide, as stated in the case of steel, for enlarged plant, better equipment and methods, etc.

Detailed information is also asked covering the performance of individual units in the case of both steel and pig iron, with provision to explain conditions as to charging, fuel, and repair, relining and rebuilding allowances, and those factors which are essential in calculating the output of the individual furnace.

It is clear that the results of the canvass are going to give information of unusual value, aside from establishing the practically attainable capacity for the whole country. An analysis of the detailed facts would constitute in itself an engineering paper highly illuminating in matters of plant design and operation.

Status of Employee Representation to Be Discussed

A comprehensive conference on employee representation will be held by the production executives' division of the American Management Association, at the New Kansas City Athletic Club, Kansas City, Mo., Nov. 30 and Dec. 1.

At the opening session Sam A. Lewisohn, vice-president of the Miami Copper Co., New York, will speak on the Present Status of Employee Representation in America, Arthur T. Morey, general manager of the Commonwealth Steel Co., St. Louis, being among those to discuss the paper. Arthur H. Young, industrial relations counsel, Curtis, Fosdick & Belknap, New York, will present a paper at the same session on What Are the Chief Problems Involved in the Introduction of a Plan of Employee Representation and How Can They Best Be Met?

J. M. Larkin, assistant to the president of the Bethlehem Steel Co., and E. S. Cowdrick, consulting engineer, New York, will be among those discussing a paper by Homer Niesz, manager of industrial relations, Commonwealth Edison Co., Chicago. The title of Mr. Niesz' paper is Who Should Be Eligible to Vote for Employee Representation, Who Should Serve as Such, and What Principles Should Govern the Number of Representatives in Any Assembly or Council? This session, to be held Nov. 30, will be presided over by Frank P. Cox, manager, West Lynn Works, General Electric Co.

At a dinner meeting, Nov. 30, Cyrus McCormick, Jr., vice-president in charge of manufacture, International Harvester Co., Chicago, will speak on Employee Representation as Affecting the Attitude of Labor and Business, another address being by E. K. Hall, vice-president of the American Telephone & Telegraph Co., on The Philosophy of Employee Representation.

Questions to be discussed at other sessions include: Should an employee representation plan be limited or unlimited with respect to the type of questions which an assembly may consider and act upon, and what grades and types of executives should be appointed as management representatives, and to what extent should they be instructed how to vote? Other questions are: Should an employee representation plan provide for a management veto on the acts of the assembly or council for arbitration in case of deadlock; what kind of support should foremen be expected to give a representation plan, and how can it be secured, and what can be done to make council or assembly meetings interesting and profitable when everything is peaceful and there is not much regular business to be transacted?

W. E. Worth, superintendent of the Weber Wagon works of the International Harvester Co., will speak on How Can Employees Best Be Kept Interested in and Informed About the Accomplishments of a Plan of Representation, and How Shall the Plan Be Sold to New Employees? Following this there will be a demonstration of the method used by Swift & Co. for interesting new employees.

Honor Memory of John Ericsson

In commemoration of the arrival in this country of John Ericsson (Nov. 23, 1839), a dinner was held Saturday evening, Nov. 21, at the Engineers' Club, New York, by the Capt. John Ericsson Memorial Society of Engineers. About sixty members of the society were present. Capt. A. P. Lundin, president of the organization, presided.

Several short addresses bearing on Ericsson's life and achievements were made, and President Lundin paid tribute to distinguished members who had died in the past year. These included Carl George P. DeLaval, who had been general manager of the Henry R. Worthington Co. and chief engineer of the Blake & Knowles Steam Pump Co., a former president of the Ericsson society; B. W. M. Hanson, Hanson-Whitney Co., Hartford, Conn.; F. W. H. Pegelow, who had been director general of the State Railroads of Sweden, and Edward Wollert, a charter member of the society, who had been production engineer of the Swedish Match Trust. In connection with this tribute effective music was rendered by a quartet from the "Lyran Society."

Clarence E. Whitney, president Whitney Mfg. Co., Hartford, Conn., who had long been associated with Mr. Hanson, related personal reminiscences of his late friend, dwelling in particular on his contribution to the winning of the World War and his genius in evolving new machinery in a way that necessitated few or no changes in the original design.

Other speakers were Thomas Towne, Frank Mossberg Co., Attleboro, Mass., a past president of the society; George J. Miller, president Delamater Veterans' Association of New York (a kindred organization dedicated to the perpetuation of the traditions and spirit of Ericsson and Delamater); Harry A. Gillis, who has specialized in locomotive construction; Capt. Charles A. McAllister, U. S. N., retired; Eric A. Lof, vice-president of the society, who told of a recent visit to Ericsson's tomb at Filipstad, Sweden; Luis Jackson, railroad builder and engineer; Byron Newton, former assistant treasurer of the United States; Guy Hubbard, of the staff of the American Society of Mechanical Engineers, and Lieut. Com. John H. Barnard, U. S. N., retired.

Regrets from Thomas A. Edison and Charles M. Schwab, honorary members, were read by E. T. I. Thygeson, secretary.

A feature of the evening was the election of Gust. Pers. Wern, of New York, as an honorary member of the society, in recognition of the work he has done for it since its inception.

Iron and Steel Markets

November Gain in Unfilled Orders

Market Unmoved by the Possibility of a Soft Coal Strike—Steel Works Operations Hold Up Well—Increasing Imports of Pig Iron—Tin Plate Price Unchanged

LEADING steel companies continue to put new business on their books in excess of current shipments. In the case of the Steel Corporation, orders have averaged for some time 10,000 tons a day more than the production of finishing mills, and taking the industry as a whole November will show a substantial gain in unfilled orders.

The outlook for December is that steel works operations will be at substantially the present rate, which is 83 per cent for the Steel Corporation and 80 per cent for Bethlehem, with other leading independent companies on about that basis. The Steel Corporation has blown out two blast furnaces at its Wheeling district pipe plant and blown in three Carnegie furnaces, while Bethlehem will add one furnace to its active list.

As the bulk of the rail buying for 1926 is over, next month is not likely to equal November in orders for the heavier products, but prospects are good in lighter lines, as wire, sheets, tin plate and strip steel. Recent buying of bars has been heavy, and many consumers are now covered well into the first quarter.

The feature of the recent buying movement is that consumers have been more disposed than in a good many months to take on a fair stock of steel. At the same time producers, seeing that the record steel output of 1925 has been made at the expense of profits, are more intent on getting a fair price for their 1926 product than on running their mills at the highest rate.

Following the recent effort of Central Western mills to stabilize prices, there is a prospect that the Eastern plate market, long the weakest spot in the industry, will work higher by $2 to $3 a ton.

Neither in pig iron nor in coke has the market shown signs of taking seriously the threat of a soft coal strike. From $5 to $5.50 a week ago blast furnace coke for spot shipment has dropped to a range of $4 to $4.50.

Meanwhile pig iron is quieter. Most melters are covered for the next few months and see less prospect of further advance in price based on fuel scarcity, in view of the large output of non-union coal.

A few automobile companies are slowing down production—as much as 15 per cent in some cases—but the average in the industry is still high for the season, notably in output of buses and taxicabs.

The American Sheet & Tin Plate Co. has opened its books for early 1926 business in tin plate at the present price of $5.50, despite the advance in tin. The company has also moved up to the prices for sheets recently announced by several independent producers.

Bookings of commercial steel castings in October represented nearly 61 per cent of shop capacity, the highest figure since February and one-fourth better than in September.

Fabricated steel plate business in October was also better than in September, the Bureau of the Census figures being 41 per cent of capacity for the one month and 35 for the other.

In the export market the United States divided with Wales 60,000 base boxes of tin plate for Japan. An order for 350 tons of I-beams for Yokohama was lost to a British maker at a price $9 a ton under the American bid.

The range of European steel products offered for importation has broadened, and while prices, c.i.f., duty paid, are $8 and more a ton below the American prices, no business of moment has been done.

A Baltimore contractor, inquiring for 1400 tons of reinforcing bars for a railroad sewer project, has been offered German steel at 1.95c., duty paid. This is about $7 a ton below domestic bars, assuming the latter to be quoted on a 2c. Pittsburgh basis.

Iron and steel exports from the United States in October at 141,800 tons, were about the average of the preceding twelve months. Imports, at 80,200 tons, proved to be the largest since June. The pig iron movement, 37,700 tons, was the heaviest since March. Finished steel imports amounted to 23,500 tons (including some cast iron pipe, under the heading "tubular products"). Exports of finished steel were 111,500 tons.

No change occurred this week in THE IRON AGE composite prices. That for pig iron stands at $21.29 for the third week, compared with $18.96 in July and early August. Finished steel remains at 2.439c. per lb., against a low for this year of 2.396c. in August and September and a high of 2.560c. in January.

Pittsburgh

Steel Consumers in Buying Mood—Coke Decline Reassures Pig Iron Melters

PITTSBURGH, Nov. 24.—Steel consumers plainly are in a buying mood and such stiffening of prices as has occurred does not seem to deter their inclination not only to cover in full against current needs but to place their first quarter requirements. There still is room for improvement in business in wire products and the pipe market is really quiet, but in all other finished products orders are coming in with great freedom, and with manufacturers showing no tendency unduly to increase production, order books are steadily growing in size.

In this and nearby districts ingot production is around 85 per cent of capacity, and there is not much tendency to move from this level, the theory being

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics
At Date, One Week, One Month, and One Year Previous

For Early Delivery

Pig Iron, Per Gross Ton:	Nov. 24, 1925	Nov. 17, 1925	Oct. 27, 1925	Nov. 25, 1924
No. 2X, Philadelphia‡	$23.76	$23.76	$23.26	$23.76
No. 2, Valley furnace†	20.50	20.50	19.50	20.50
No. 2, Southern, Cin'ti†	24.69	24.69	24.05	22.05
No. 2, Birmingham, Ala.†	21.00	21.00	20.00	18.00
No. 2 foundry, Ch'go furn.*	23.00	23.00	22.00	21.50
Basic, del'd, eastern Pa.	22.50	22.50	22.00	21.50
Basic, Valley furnace	20.00	20.00	19.00	20.00
Valley Bessemer del'd P'gh	22.76	22.76	21.76	22.26
Malleable, Chicago furn.*	23.00	23.00	22.00	21.50
Malleable, Valley	20.50	20.50	19.50	20.50
Gray forge, Pittsburgh	21.76	21.76	20.76	21.76
L. S. charcoal, Chicago	29.04	29.04	29.04	29.04
Ferromanganese, furnace	115.00	115.00	115.00	105.00
Rails, Billets, etc., Per Gross Ton:				
O.-h. rails, heavy, at mill	$43.00	$43.00	$43.00	$43.00
Bess. billets, Pittsburgh	35.00	35.00	33.50	35.50
O.-h. billets, Pittsburgh	35.00	35.00	33.50	35.50
O.-h. sheet bars, P'gh	36.00	36.00	33.50	37.00
Forging billets, base, P'gh	40.00	40.00	40.00	40.50
O.-h. billets, Phila.	40.30	40.30	39.30	41.67
Wire rods, Pittsburgh	45.00	45.00	45.00	45.00
	Cents	Cents	Cents	Cents
Skelp, gr. steel, P'gh, lb.	1.90	1.90	1.90	1.90
Light rails at mill	1.65	1.65	1.65	1.80
Finished Iron and Steel,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Iron bars, Philadelphia	2.22	2.22	2.12	2.32
Iron bars, Chicago	2.00	1.95	1.90	2.00
Steel bars, Pittsburgh	2.00	2.00	2.00	2.10
Steel bars, Chicago	2.10	2.10	2.10	2.10
Steel bars, New York	2.34	2.34	2.34	2.34
Tank plates, Pittsburgh	1.90	1.90	1.80	1.90
Tank plates, Chicago	2.10	2.10	2.10	2.20
Tank plates, New York	1.94	1.94	1.94	2.14
Beams, Pittsburgh	1.90	1.90	1.90	2.10
Beams, Chicago	2.10	2.10	2.10	2.20
Beams, New York	2.24	2.24	2.24	2.24
Steel hoops, Pittsburgh	2.50	2.50	2.50	2.50

*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.
†Silicon, 1.75 to 2.25. ‡Silicon, 2.25 to 2.75.

Sheets, Nails and Wire,	Nov. 24, 1925	Nov. 17, 1925	Oct. 27, 1925	Nov. 25, 1924
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Sheets, black, No. 28, P'gh	3.25	3.25	3.15	3.50
Sheets, black, No. 28, Chicago dist. mill	3.45	3.35	3.25	3.60
Sheets, galv., No. 28, P'gh	4.50	4.50	4.30	4.60
Sheets, galv., No. 28, Chicago dist. mill	4.70	4.60	4.40	4.70
Sheets, blue, 9 & 10, P'gh	2.40	2.40	2.30	2.70
Sheets, blue, 9 & 10, Chicago dist. mill	2.60	2.50	2.40	2.80
Wire nails, Pittsburgh	2.65	2.65	2.65	2.75
Wire nails, Chicago dist. mill	2.70	2.70	2.70	2.85
Plain wire, Pittsburgh	2.50	2.50	2.50	2.50
Plain wire, Chicago dist. mill	2.55	2.55	2.55	2.60
Barbed wire, galv., P'gh	3.35	3.35	3.35	3.45
Barbed wire, galv., Chicago dist. mill	3.40	3.40	3.40	3.55
Tin plate, 100 lb. box, P'gh	$5.50	$5.50	$5.50	$5.50
Old Material, Per Gross Ton:				
Carwheels, Chicago	$18.50	$18.50	$18.00	$19.00
Carwheels, Philadelphia	18.50	18.50	18.50	19.00
Heavy steel scrap, P'gh	19.50	19.50	19.00	20.00
Heavy steel scrap, Phila.	17.50	17.50	17.00	19.00
Heavy steel scrap, Ch'go	16.00	16.00	16.00	17.50
No. 1 cast, Pittsburgh	18.00	18.00	18.00	18.50
No. 1 cast, Philadelphia	18.00	18.00	18.00	18.50
No. 1 cast, Ch'go (net ton)	18.25	18.25	18.00	18.00
No. 1 RR. wrot, Phila.	18.50	18.50	18.50	19.00
No. 1 RR. wrot. Ch'go (net)	15.50	15.75	15.00	16.00
Coke, Connellsville, Per Net Ton at Oven:				
Furnace coke, prompt	$4.00	$5.00	$8.50	$3.15
Foundry coke, prompt	5.25	6.00	8.50	4.25
Metals,				
Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York	14.50	14.62½	14.75	14.00
Electrolytic copper, refinery	14.12½	14.37½	14.50	13.75
Zinc, St. Louis	8.80	8.45	8.60	6.85
Zinc, New York	9.15	8.80	8.95	7.20
Lead, St. Louis	9.50	9.50	9.25	8.60
Lead, New York	9.85	9.85	9.60	9.00
Tin (Straits), New York	63.55	63.62½	63.25	54.25
Antimony (Asiatic), N. Y.	20.00	20.00	19.00	14.50

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

THE IRON AGE Composite Prices

Finished Steel

Nov. 24, 1925, 2.439c. Per Lb.

One week ago	2.439c.
One month ago	2.403c.
One year ago	2.474c.
10-year pre-war average	1.689c.

Based on prices of steel bars, beams, tank plates, plain wire, open-hearth rails, black pipe and black sheets. These products constitute 88 per cent of the United States output of finished steel.

	High		Low	
1925	2.560c.,	Jan. 6	2.396c.,	Aug. 18
1924	2.789c.,	Jan. 15	2.460c.,	Oct. 14
1923	2.824c.,	April 24	2.446c.,	Jan. 2

Pig Iron

Nov. 24, 1925, $21.29 Per Gross Ton

One week ago	$21.29
One month ago	20.38
One year ago	20.54
10-year pre-war average	15.72

Based on average of basic and foundry irons, the basic being Valley quotation, the foundry an average of Chicago, Philadelphia and Birmingham.

	High		Low	
1925	$22.50,	Jan. 13	$18.96,	July 7
1924	22.88,	Feb. 26	19.21,	Nov. 3
1923	30.86,	March 20	20.77,	Nov. 26

that it is a sounder situation when the mills are a little behind their obligations than abreast of them. A nice balance between production and consumption is one means of insuring price stability. As this year has not shown profits commensurate with an exceptionally large production and running up production faster than the ability of the country to consume led directly to the unsatisfactory prices ruling over most of the year, it seems probable that in the coming year fair profits, rather than record outputs, will be the aim of steel manufacturers.

Prices of most products have had a substantial recovery from the low levels of the late summer, but the contention still is heard that, based on costs, even, today's prices are not high. Evidently steel consumers accept that view because in sheets, on which the advance has been greatest, contracts for first quarter tonnages are being placed with marked freedom at prices from $5 to $12 a ton above the low levels of last summer. In the heavy tonnage products first quarter business also is coming in freely and at prices well above the levels of a few months ago. Mills in this district are well supplied with business in plates, shapes and bars and comfortable backlogs also exist in sheets and strips.

The local maker of standard rails has enough business to insure full operations for five months. Meanwhile, first quarter semi-finished steel contracts are steadily flowing in, despite the recent advances in prices. There has been some slowing down in the production of automobiles with some companies down as much as 15 per cent from their recent schedules, but

the general average of operations of that industry are high for this time of year, notably in the manufacture of buses and taxicabs. There has been so much replacement of steam and traction lines by the motor bus that it seems that a fresh avenue of activity has been opened up to the industry that is likely to offset any temporary loss in sales of pleasure cars.

Higher prices for crude oil and improvement in the oil supply situation from the viewpoint of producers are counted on to stimulate the pipe business before the new year is very far along. Other steel consuming industries are still running well and the steel industry takes heart as to the future from the fact that there is no evidence yet that consuming industries are stocking much steel.

The continued descent of coke prices has quieted fears as to higher pig iron prices, and that market has had another quiet week. Furnace coke, which only a few weeks ago brought as high as $9 for shipment east as a substitute for hard coal, has been sold in the past few days at $4. This price, of course, has been for loaded cars which producers had to find a market for, in the absence of Eastern buying. Many reports have been current that a settlement of the hard coal strike is not far off, but the more common belief here is that such a development is more of a hope than an early possibility.

Pig Iron.—The past week has been a quiet one in this market. Melters seem to have concluded that prices are not going to jump as they threatened to a short time ago when there were indications that first quarter coke supplies would cost two or three times as much as those for this quarter. With the knowledge that furnace coke has receded to as low as $4 per net ton at ovens, pig iron consumers have figured it out that there is a possibility that first quarter tonnages will be available at a fairly reasonable figure and that material advances are unlikely. Under the circumstances, they are not as eager for additional supplies as recently. They are taking out iron freely on contracts and considerable iron originally bought for first quarter shipment continues to move from furnace yards. There is no weakening in prices because producers are well sold against yard stocks and production over the remainder of the year, and while it is probable that coke supplies for first quarter will be cheaper than seemed likely a few weeks ago, there are a few who expect to buy coke for that period as cheaply as they bought fuel now in use. The National Tube Co. late last week blew out two furnaces at its Riverside works, Wheeling, W. Va., but about the same time the American Steel & Wire Co. blew in its second furnace at Donora, Pa. The total number of furnaces in production in this and nearby districts is the same as one month ago.

We quote Valley furnace, the freight rate for delivery to the Cleveland or Pittsburgh district being $1.76 per gross ton:

Basic	$20.00
Bessemer	21.00
Gray forge	20.00
No. 2 foundry	20.50
No. 3 foundry	20.00
Malleable	20.50
Low phosphorus, copper free	$28.00 to 28.60

Ferroalloys.—A little more interest is being shown in ferromanganese and besides some fair-sized spot sales, there are a number of inquiries for first quarter tonnages. The idea is waning that prices are likely to dip and with steel works operations rising, consumption of ferromanganese is increasing with the attendant depletion of stocks. Agents of the producers of the higher grades of ferrosilicon have been busy writing up 1926 contracts; the 1926 price on 50 per cent material is $85, delivered east of the Mississippi River, an advance of $2.50 per ton over the 1925 contract price. On 75 per cent material the quotation is $145, but there is talk of an advance to $150. Makers of electrical sheets are the principal users of the latter material and they have not yet closed for next year's requirements. Makers of rails and alloy steels are busy and are consuming spiegeleisen freely. Producers of this material are well obligated and have firm ideas as to prices. Prices are given on page 1475.

Semi-Finished Steel.—Sheet makers dependent on outside sources for sheet bars are protesting against the advance to $36, Pittsburgh or Youngstown, for first quarter, but with no apparent effect on producers, most of whom are makers of sheets and are fortified by the advance in the finished product and the fact that the market is active. The market is well established at $35, Pittsburgh or Youngstown, for billets, 4-in. and larger, and slabs, 8 in. x 2 in. and larger. Mills making forging billets regularly are talking higher prices, but $40, base, still is the prevailing quotation. Skelp is at 1.90c., with almost no open market activity observed. Prices are given on page 1475.

Wire Products.—Business is not so good in these lines as in some others, but as distribution is essentially a jobbing proposition, there is the inventory factor to consider so far as supplies for shipment over the remainder of the year are concerned. Prices are better stabilized than for fully a year and the idea that an advance from these levels is more likely than a decline is responsible for greater interest in early 1926 requirements. Manufacturers' wire, which has been in good demand throughout the year, is still very active and orders for woven fence and fence materials are increasing. Makers are mentioning higher prices for coated nails, contending that present prices do not bring back a new dollar for an old one and that the per pound price is considerably below that of bright nails. Prices are given on page 1473.

Rails and Track Supplies.—Makers here are still waiting for a distribution of the accessories business of the New York Central Lines and the Baltimore & Ohio. Splice and angle bar business is likely to suffer somewhat from the recent change in the standard rail length specification from 33 ft. to 39 ft. since, of course, fewer bars will be required with the longer rail than the shorter one. The local maker of standard rails has sufficient business on order to insure a full rate of mill operations for the next five months. Some of the business calls for December delivery, as it is now the policy of trunk lines to take delivery beginning in December. Light rails are not moving with much snap and prices are no more than steady. Prices are given on page 1473.

Tubular Goods.—Standard pipe still is selling well, but demands are no tax upon the supply available from the manufacturers, as they represent actual needs, which at this season of the year rarely are really heavy. Jobbers are not disposed to build up their stocks with the year-end inventories in sight, and with oil country goods seasonably quiet it is not surprising that there continues to be some slowing down of pipe mill operations. This branch of the steel industry now is operating about 65 per cent of capacity and some production is going into mill stocks. The outlook for early 1926 business is considered promising, because of the stronger oil situation. An advance of 25c. per bbl. in the price of Pennsylvania crude oil is noted with some satisfaction and reports as to the development of a new oil field in Arkansas suggest heavy demands from that direction. The boiler tube market still is very weak; there are too many sellers for buyers and with a few makers able to supply all present requirements, buyers have merely to wait for competition to produce very low prices. Lapweld steel tubes are selling at 7 fives beyond the card in small lots; charcoal iron tubes at 3 tens beyond the card and there is no longer much actual price spread between lapweld and seamless tubes. Discounts are given on page 1473.

Sheets.—The American Sheet & Tin Plate Co., under date of Nov. 19, opened its books for first quarter at the prices previously announced by several independent producers, or 3.35c., base Pittsburgh, for black, 2.50c. base, for blue annealed, 4.60c. base, for galvanized, and 4.50c. base, for automobile body sheets. The company also made an advance of $2 per ton in its prices on long ternes and in connection with automobile body sheets announced that the new price permitted it to ship greater percentages of seconds. Formerly buyers were expected to take up to 15 per cent in seconds; under the new arrangement they must take up to 25 per cent on No. 22 gage material and lighter, while on No. 20 gage and heavier, up to 36 in. wide, they must take 15 per cent; on sheets 36 in. to 42 in. wide, 20 per cent, and on sheets wider than 42 in., 25 per cent. This change, particularly with reference to sheets wider

SIDE GUIDE AND GRIPPER

Prices of Finished Iron and Steel Products (Carload Lots)

Iron and Steel Bars

Soft Steel

	Base Per Lb.
F.o.b. P'gh mills	2.00c. to 2.10c.
F.o.b. Chicago	2.10c.
Del'd Philadelphia	2.32c.
Del'd New York	2.34c. to 2.44c.
Del'd Cleveland	2.19c.
F.o.b. Birmingham	2.15c. to 2.25c.
C.i.f. Pacific ports	2.35c.
F.o.b. San Francisco mills	2.40c.

Billet Steel Reinforcing

F.o.b. Pittsburgh mills	2.00c. to 2.10c.

Rail Steel

F.o.b. mill	1.80c. to 1.90c.
F.o.b. Chicago	2.00c. to 2.10c.

Iron

Common iron, f.o.b. Chicago	2.00c.
Refined iron, f.o.b. P'gh mills	3.00c.
Common iron, del'd Phila'phia	2.22c.
Common iron, del'd New York	2.24c.

Tank Plates

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c. to 2.00c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.00c. to 2.10c.
Del'd Cleveland	1.99c. to 2.09c.
Del'd Philadelphia	1.92c. to 2.02c.
Del'd New York	1.94c. to 2.04c.
C.i.f. Pacific ports	2.20c. to 2.25c.

Structural Shapes

	Base Per Lb.
F.o.b. Pittsburgh mill	1.90c. to 2.10c.
F.o.b. Chicago	2.10c.
F.o.b. Birmingham	2.05c. to 2.15c.
Del'd Cleveland	2.09c. to 2.19c.
Del'd Philadelphia	2.12c. to 2.22c.
Del'd New York	2.24c. to 2.34c.
C.i.f. Pacific ports	2.25c. to 2.30c.

Hot-Rolled Flats (Hoops, Bands and Strips)

	Base Per Lb.
All gages, narrower than 6 in., P'gh	2.50c.
All gages, 6 in. and wider, P'gh	2.30c.
All gages, 6 in. and narrower, Chicago	2.60c.
All gages, wider than 6 in., Chicago	2.50c.

Cold-Finished Steel

	Base Per Lb.
Bars, f.o.b. P'gh mills	2.50c.
Bars, f.o.b. Chicago	2.50c.
Bars, Cleveland	2.55c.
Shafting, ground, f.o.b. mill	*2.70c. to 3.00c.
Strips, f.o.b. P'gh mills	3.90c.
Strips, f.o.b. Cleveland mills	3.90c.
Strips, delivered Chicago	4.20c.
Strips, f.o.b. Worcester mills	4.05c.

*According to size.

Wire Products

(To jobbers in car lots f.o.b. Pittsburgh and Cleveland)

	Base Per Keg
Wire nails	$2.65
Galv'd nails, 1-in. and longer	4.65
Galv'd nails, shorter than 1 in	4.90
Galv'd staples	3.35
Polished staples	3.10
Cement coated nails, base, per count keg	1.85

	Base Per 100 Lb.
Bright plain wire, No. 9 gage	$2.50
Annealed fence wire	2.65
Spring wire	3.50
Galv'd wire, No. 9	3.10
Barbed wire, galv'd	3.35
Barbed wire, painted	3.10

	Per Net Ton
Woven wire fence, base, to retailers	$65.00

Chicago district mill and delivered Chicago prices are $1 per ton above the foregoing. Birmingham mill prices $3 a ton higher; Worcester, Mass., mill $3 a ton higher on production of that plant, and Duluth, Minn., mills $2 a ton higher; Anderson, Ind., $1 higher.

Bale Ties

(In carloads, f.o.b. Cleveland)

	Per Cent off List
To jobbers	80 and 2
To retailers	75, 10 and 8½

Sheets

Blue Annealed

	Base Per Lb.
Nos. 9 and 10, f.o.b. Pittsburgh	2.40c. to 2.50c.
Nos. 9 and 10, f.o.b. Ch'go dist. mills	2.60c.
Nos. 9 and 10, del'd Phila'phia	2.72c. to 2.82c.

Box Annealed, One Pass Cold Rolled

No. 28, f.o.b. Pittsburgh	3.25c. to 3.35c.
No. 28, f.o.b. Ch'go dist. mill	3.45c.
No. 28, del'd Phila'phia	3.57c. to 3.67c.

Galvanized

No. 28, f.o.b. Pittsburgh	4.50c. to 4.60c.
No. 28, f.o.b. Chicago dist. mill	4.70c.
No. 28, del'd Phila'phia	4.82c. to 4.92c.

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	3.25c. to 3.35c.
No. 28, f.o.b. Chicago dist. mill	3.35c.

Automobile Body Sheets

No. 22, f.o.b. Pittsburgh	4.40c. to 4.50c.

Long Ternes

No. 28, 8-lb. coating, f.o.b. mill	4.85c.

Tin Plate

	Per Base Box
Standard cokes, f.o.b. P'gh district mills	$5.50
Standard cokes, f.o.b. Gary and Elwood, Ind.	5.60

Terne Plate

(*F.o.b. Morgantown or Pittsburgh*)

(Per package, 20 x 28 in.)

8-lb. coating, 100 lb. base	$11.40
8-lb. coating I.C.	11.70
15-lb. coating I.C.	14.85
20-lb. coating I.C.	$16.20
25-lb. coating I.C.	17.90
30-lb. coating I.C.	19.45
40-lb. coating I.C.	21.55

Rails

	Per Gross Ton
Standard, f.o.b. mill	$43.00

	Base Per Lb.
Light (from billets), f.o.b. mill	1.65c. to 1.70c.
Light (from billets), f.o.b. Ch'go mill	1.80c. to 1.90c.
Light (from rail steel), f.o.b. mill	1.50c. to 1.60c.

Track Equipment

(F.o.b. Mill)

	Base Per 100 Lb.
Spikes, ⅜ in. and larger	$2.80 to $3.10
Spikes, ½ in. and smaller	3.00 to 3.50
Spikes, boat and barge	3.25
Track bolts, all sizes	3.90 to 4.25
Tie plates, steel	2.35 to 2.50
Angle bars	2.75

Alloy Steel Bars

(F.o.b. Pittsburgh)

S. A. E. Series Numbers		Base Per 100 Lb.
2100*	(1½% Nickel, 10 to 20% Carbon)	$3.25 to $3.30
2300	(3½% Nickel)	4.60 to 4.70
2500	(5% Nickel)	5.80 to 5.90
3100	(Nickel Chromium)	3.60 to 3.70
3200	(Nickel Chromium)	5.25 to 5.35
3300	(Nickel Chromium)	7.25 to 7.35
3400	(Nickel Chromium)	6.50 to 6.60
5100	(Chromium Steel)	3.60
5200*	(Chromium Steel)	7.50 to 8.25
6100	(Chrom. Vanadium bars)	4.30 to 4.40
6100	(Chrom. Vanad. spring steel)	3.85
9250	(Silicon Manganese spring steel)	3.25 to 3.30
	Carbon Vanadium (0.45 to 0.55 Carbon, 0.15 Vanad.)	4.20 to 4.45
	Nickel Chrome Vanadium (0.60 Nickel, 0.50 Chrom., 0.15 Vanad.)	4.55 to 4.65
	Chromium Molybdenum bars (0.80—1.10 Chrom., 0.25—0.40 Molyb.)	4.35 to 4.45
	Chromium Molybdenum bars (0.50—0.70 Chrom., 0.15—0.25 Molyb.)	3.50 to 3.60
	Chromium Molybdenum spring steel (1—1.25 Chrom., 0.30—0.50 Molyb.)	4.75 to 5.00

Above prices are for hot-rolled steel bars, forging quality. The ordinary differential for cold-drawn bars is 1c. per lb. higher. For billets 4 x 4 to 10 x 10 in. the price for a gross ton is the net price for bars of the same analysis. For billets under 4 x 4 in. down to and including 2½-in. squares, the price is $5 a gross ton above the 4 x 4 billet price.

*Not S. A. E. specifications, but numbered by manufacturers to conform to S. A. E. system.

Welded Pipe

Base Discounts f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Butt Weld

Steel			Iron		
Inches	Black	Galv.	Inches	Black	Galv.
⅛	45	19½	¼ to ⅜	+11	+39
¼ to ⅜	51	25½	½	22	2
½	56	42½	¾	28	11
¾	60	48½	1 to 1½	30	13
1 to 3	62	50½			

Lap Weld

2	55	43½	2	23	7
2½ to 6	59	47½	2½	26	11
7 and 8	56	43½	3 to 6	25	13
9 and 10	54	41½	7 to 12	26	11
11 and 12	53	40½			

Butt Weld, extra strong, plain ends

⅛	41	24½	2 to 3	61	50½
¼ to ⅜	47	30½	¼ to ⅜	+11	+54
½	53	42½	½	21	7
¾	58	47½	¾	28	12
1 to 1½	60	49½	1 to 1½	30	14

Lap Weld, extra strong, plain ends

2	53	42½	2	23	9
2½ to 4	57	46½	2½ to 4	29	15
4½ to 6	56	45½	4½ to 6	28	14
7 to 8	52	39½	7 to 8	21	7
9 and 10	45	32½	9 to 12	16	2
11 and 12	44	31½			

To the large jobbing trade the above discounts on steel pipe are increased (on black) by one point, with supplementary discount of 5% and (on galvanized) by 1½ point, with supplementary discount of 5%. On iron pipe, both black and galvanized, the preferentials to large jobbers are 1, 5 and 2½% beyond the above discount.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base 2½ points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Base Discounts f.o.b. Pittsburgh

Lap Welded Steel		Charcoal Iron	
2 to 2¼ in.	27	1½ in.	+18
2½ to 2¾ in.	37	1¾ to 1⅞ in.	+ 8
3 in.	40	2 to 2¼ in.	— 2
3¼ to 3¾ in.	42½	2½ to 3 in.	— 7
4 to 13 in.	46	3¼ to 4½ in.	— 9

Beyond the above discounts, 5 to 7 fives extra are given on lap welded steel tubes and 2 to 3 tens on charcoal iron tubes.

Standard Commercial Seamless Boiler Tubes

Cold Drawn

1 in.	60	3 in.	45
1¼ to 1½ in.	52	3½ to 3½ in.	47
1¾ in.	36	4 in.	50
2 to 2¼ in.	51	4½, 5 and 6 in.	45
2½ to 2¾ in.	39		

Hot Rolled

2 and 2¼ in.	34	3¼ and 3½ in.	50
2½ and 2¾ in.	42	4 in.	53
3 in.	48	4½, 5 and 6 in.	45

Less carloads, 4 points less. Add $8 per net ton for more than four gages heavier than standard. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gage to be held at mechanical tube list and discount. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

Seamless Mechanical Tubing (New List)

	Per Cent off List
Carbon 0.10 to 0.30 base	50 to 55
Carbon 0.30 to 0.40 base	45 to 50

Plus differentials for lengths over 18 ft. and for commercially exact lengths. Warehouse discounts on small lots are less than the above.

than 42 in., was found necessary because of the heavy rejections and heavy losses which resulted from the fact that automobile sheet seconds that could not be shipped usually had to be sold for less than the price of ordinary black sheets. It cannot yet be said that recent prices have entirely disappeared, but the productive capacity represented by mills now quoting below the prices of the American Sheet & Tin Plate Co. is very small. It is a matter of some surprise that there has not been the usual lull following the announcement of the advance. Buyers continue to specify well against old business and to enter first quarter contracts. Sheet mill operations remain high, with the independents above 90 per cent of capacity and the American Sheet & Tin Plate Co. at close to that mark. Prices are given on page 1473.

Tin Plate.—The American Sheet & Tin Plate Co., as of Nov. 19, opened its books for first quarter to jobbers and for the first half of 1926 to can manufacturers, continuing the present price of $5.50 per base box, Pittsburgh, on standard cokes. The company continues the former differential of 10c. per base box higher at Gary and Elwood, Ind. On charcoal tin plate, prices have been revised upward and higher prices also rule for short ternes. Independent companies generally have followed the prices of the leading producer. Formal entry of much business taken verbally, subject to the announcement of prices, now is being made. All makers are well informed as to the requirements of their regular customers and mill operations over the next few months will be governed by that knowledge.

Cold-Finished Steel Bars.—Business continues good with local producers, who find that the new card of extras, eliminating all base price material, and adding substantially to the cost of material rolled exactly to size, has not been a hindrance to the placing of first quarter business. The price used for figuring extras is 2.50c., Pittsburgh, and on all ordinary tonnages that price now is well observed.

Bolts, Nuts and Rivets.—The expectation now is that first quarter prices of bolts and nuts will be announced late this week, and that present discounts, being based on bars and rods at about present levels, will remain unchanged. Current business in bolts and nuts is good. Rivets are not selling freely at today's prices, but specifications against lower-priced contracts are fairly free. Prices and discounts are given on page 1475.

Steel and Iron Bars.—Steel bars are steadily growing stronger and while there has been no change in the price range, it is a fact that tonnages of a size that recently would have brought out a quotation of 2c., base Pittsburgh, have been sold in the past week at 2.10c., base Pittsburgh. It takes a much larger tonnage now to bring out the lower price than was the case recently. The mills are well supplied with business and are not anxious for more at recent prices. Iron bars are moving steadily at recent quotations. Prices are given on page 1473.

Structural Steel.—Mills in this district still are aiming at 2c., base Pittsburgh, as a minimum price on large structural beams, and it takes an exceptionally attractive order now to bring out a price of 1.90c. Structural business in the Pittsburgh district is not very heavy, but shops in this district benefit from the activity in other parts of the country. Plain material prices are given on page 1473.

Plates.—Consumers are showing considerable anxiety about coverage for the early part of 1926 and mill order books are filling up with considerable rapidity. The aim of manufacturers is 2c., base Pittsburgh, for large tonnages for first quarter shipment, but 1.90c. has not disappeared. Prices are given on page 1473.

Hot-Rolled Flats.—Independent makers in this district are taking first quarter business at present prices of 2.50c., base Pittsburgh, for material narrower than 6 in. and 2.30c., base, for wider material. Books have been opened very quietly by makers here and some of them are not very anxious for business at those figures, believing that if they have capacity open they will be able to obtain higher prices. There is a good business in these lines despite a recession in automobile production by some manufacturers. Prices are given on page 1473.

Cold-Rolled Strips.—Makers here are open to first quarter business at 3.90c., base Pittsburgh, but some of them are not actively canvassing the market at that price, as they expect to be able to get more if they have open capacity to meet later demands.

Coke and Coal.—The decline in coke prices still is unhalted, with a further drop of $1 a ton from the prices of a week ago. There has been no revival of Eastern demand for coke to replace hard coal and with the demand for metallurgical purposes not sufficient to take up production, accumulations have continued to pile up in the Connellsville district and their disposal has been possible only at buyers' valuations. From a range of $5 to $5.50 a week ago, furnace coke today is quotable at $4 to $4.50 for spot shipment and standard 72-hr. coke, quoted a week ago from $6 to $7, now ranges from $5.25 to $5.75. The slump in furnace coke has temporarily stopped negotiations for first quarter contracts and it now looks as though producers would have rather reasonable ideas when the matter again is taken up. The East apparently wants good-sized coke to take the place of hard coal and few of the Connellsville district operators have the crushers and other facilities for such preparation of coke. While rejections of beehive oven coke in the East have been very frequent recently for want of proper sizing it is commented upon that not a single shipment of by-product coke going from the Clairton plant of the Carnegie Steel Co. has been turned down in the East. While suggestions of an early settlement of the anthracite strike are not taken seriously here, there is a growing belief that Connellsville operators will have to have a backlog of metallurgical coke business and will also have to give consideration to the effect of a sudden ending of the strike in making first quarter furnace and foundry coke prices. The coal market is less active, and domestic sizes which went up in price have lost much of the advance. Prices are given on page 1475.

Old Material.—A local steel company with exacting specifications has bought small tonnages of heavy melting steel, paying $19.75 to $20, and is reported to be negotiating for further supplies. Otherwise, the market has shown very little life and has developed nothing of interest. The market has a strong tone because prices are high enough in outside consuming points to keep scrap from coming into this district. Dealers have hopes of getting $20.50 and even $21 on the next important sales of heavy melting steel, but there is considerable resistance to higher prices on the part of consumers. With coke back at $4.50, the threat of a sharp advance in pig iron has subsided and recently it has been the practice of steel companies to use more iron when the cost of scrap went beyond that for iron. The Baltimore & Ohio offers 15,960 gross tons of scrap in a list dated Nov. 21, bids against which must be in by noon, Nov. 30.

We quote for delivery to consumers' mills in the Pittsburgh and other districts taking the Pittsburgh freight rate as follows:

	Per Gross Ton	
Heavy melting steel	$19.50 to	$20.00
No. 1 cast, cupola size	$18.00 to	18.50
Rails for rolling, Newark and Cambridge, Ohio; Cumberland, Md.; Huntington, W. Va., and Franklin, Pa.	21.00 to	22.00
Compressed sheet steel	18.00 to	18.50
Bundled sheets, sides and ends	17.00 to	17.50
Railroad knuckles and couplers	22.00 to	22.50
Railroad coil and leaf springs	22.00 to	22.50
Low phosphorus blooms and billet ends	24.00 to	24.50
Low phosphorus plates and other material	23.00 to	23.50
Low phosphorus punchings	21.00 to	21.50
Railroad malleable	19.50 to	20.00
Steel car axles	23.50 to	24.00
Cast iron wheels	18.50 to	19.00
Rolled steel wheels	22.00 to	22.50
Machine shop turnings	15.00 to	15.50
Short shoveling turnings		15.50
Sheet bar crops	22.00 to	23.00
Heavy steel axle turnings	17.00 to	17.50
Short mixed borings and turnings		15.50
Heavy breakable cast	18.00 to	18.50
Stove plate	14.50 to	15.00
Cast iron borings	15.00 to	15.50
No. 1 railroad wrought	15.50 to	16.00
No. 2 railroad wrought	19.50 to	20.00

Semi-Finished Steel, Raw Materials, Bolts and Rivets

Semi-Finished Steel

F.o.b. Pittsburgh or Youngstown

Billets and Blooms

	Per Gross Ton
Rolling, 4-in. and over	$35.00
Rolling, 2-in. and smaller	36.00
Forging, ordinary	40.00
Forging, guaranteed	45.00

Sheet Bars

	Per Gross Ton
Open hearth or Bessemer	$36.00

Slabs

	Per Gross Ton
8 in. x 2 in. and larger	$35.00
6 in. x 2 in. and smaller	36.00

Skelp

	Per Lb.
Grooved	1.90c.
Sheared	1.90c.
Universal	1.90c.

Wire Rods

	Per Gross Ton
*Common soft, base, No. 5 to ⅜-in.	$45.00
Common soft, coarser than ⅜-in.	$2.50 over base
Screw stock	$5.00 per ton over base
Carbon 0.20 to 0.40	3.00 per ton over base
Carbon 0.41 to 0.55	5.00 per ton over base
Carbon 0.56 to 0.75	7.50 per ton over base
Carbon over 0.75	10.00 per ton over base
Acid	15.00 per ton over base

*Chicago mill base is $46. Cleveland mill base, $45.

Raw Materials

Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	$4.55
Old range non-Bessemer, 51½% iron	4.40
Mesaba Bessemer, 51.50% iron	4.40
Mesaba non-Bessemer, 51.50% iron	4.25
High phosphorus, iron 51.50%	4.15

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron in dry Spanish or Algerian	9.50c. to 10c.
Iron ore, Swedish, average 66% iron	9.50c.
Manganese ore, washed, 51% manganese, from the Caucasus	45c.
Manganese ore, Brazilian or Indian, nominal	42c.
Tungsten ore, high grade, per unit, in 60% concentrates	$12.00 to $13.00

	Per Ton
Chrome ore, Indian basic, 48% Cr_2O_3, crude, c.i.f. Atlantic seaboard	$22.50 to $24.00

	Per Lb.
Molybdenum ore, 85% concentrates of MoS_2, New York	65c. to 70c.

Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt	$4.00 to $4.50
Foundry, f.o.b. Connellsville prompt	5.25 to 5.75
Foundry, by-product, Ch'go ovens	10.50
Foundry, by-product, New England, del'd	13.00
Foundry, by-product, Newark, del'd	11.52
Foundry, Birmingham	5.75
Foundry, by-product, St. Louis	10.00

Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	$1.50 to $2.10
Mine run coking coal, f.o.b. W. Pa. mines	2.00 to 2.25
Mine run gas coal, f.o.b. W. Pa. mines	2.00 to 2.25
Steam slack, f.o.b. W. Pa. mines	1.25 to 1.35
Gas slack, f.o.b. W. Pa. mines	1.40 to 1.50

Ferromanganese

	Per Gross Ton
Domestic, 80%, furnace or seab'd	$115.00
Foreign, 80%, Atlantic or Gulf port, duty paid	115.00

Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	$32.00 to $34.00
Domestic, 16 to 19%	31.00 to 33.00

Electric Ferrosilicon

	Per Gross Ton Delivered
50%	$82.50 to $85.00
75%	145.00

	Per Gross Ton Furnace		*Per Gross Ton Furnace*
10%	$42.00	12%	$42.00
11%	42.00	14 to 16%	$45 to 46.00

Bessemer Ferrosilicon

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		*Per Gross Ton*
10% $35.00	12%	$39.00
11% 37.00		

Silvery Iron

F.o.b. Jackson County, Ohio, Furnace

Per Gross Ton		*Per Gross Ton*
6% $27.50	10%	$33.00
7% 28.50	11%	35.00
8% 29.50	12%	37.00
9% 31.00		

Other Ferroalloys

Ferrotungsten, per lb. contained metal, del'd	$1.15 to $1.20
Ferrochromium, 4% carbon and up, 60 to 70% Cr., per lb. contained Cr. delivered	11.50c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	$3.25 to $4.00
Ferrocarbontitanium, 15 to 18%, per net ton, f.o.b. furnace, in carloads	$200.00
Ferrophosphorus, electrolytic, or blast furnace material, in carloads, 18%, Rockdale, Tenn., base, per net ton	$91.00
Ferrophosphorus, electrolytic, 24%, f.o.b. Anniston, Ala., per net ton	$122.50

Fluxes and Refractories

Fluorspar

	Per Net Ton
Domestic, 85% and over calcium fluoride, not over 5% silica, gravel, f.o.b. Illinois and Kentucky mines	$16.00
No. 2 lump	19.00
Foreign, 85% calcium fluoride, not over 5% silica, c.i.f. Atlantic port, duty paid	$16.00
Domestic, No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silica, f.o.b. Illinois and Kentucky mines	$32.50

Fire Clay

	Per 1000 f.o.b. Works High Duty	Moderate Duty
Pennsylvania	$43.00 to $46.00	$40.00 to $43.00
Maryland	48.00 to 50.00	43.00 to 45.00
Ohio	43.00 to 46.00	40.00 to 43.00
Kentucky	43.00 to 45.00	40.00 to 43.00
Illinois	43.00 to 45.00	40.00 to 43.00
Missouri	40.00 to 43.00	35.00 to 38.00
Ground fire clay, per ton	6.50 to	7.50

Silica Brick

	Per 1000 f.o.b. Works
Pennsylvania	$40.00
Chicago	49.00
Birmingham	54.00
Silica clay, per ton	$8.00 to 9.00

Magnesite Brick

	Per Net Ton
Standard size, f.o.b. Baltimore and Chester, Pa.	$65.00
Grain magnesite, f.o.b. Baltimore and Chester, Pa.	40.00

Chrome Brick

	Per Net Ton
Standard size	$43.00

Bolts, Nuts, Rivets and Set Screws

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham and Chicago)

	Per Cent Off List
Machine bolts, small, rolled threads	60 and 10
Machine bolts, all sizes, cut threads	50, 10 and 10
Carriage bolts, smaller and shorter, rolled threads	50, 10 and 10
Carriage bolts, cut threads, all sizes	50 and 10
Eagle carriage bolts	65 and 10
Lag bolts	60, 10 and 10
Plow bolts, Nos. 3 and 7 heads	50 and 10
(Extra of 20% for other style heads)	
Machine bolts, c.p.c. and t. nuts, ⅝ x 4 in.,	45, 10 and 5
Larger and longer sizes	45, 10 and 5
Bolt ends with hot-pressed nuts	50, 10 and 10
Bolt ends with cold-pressed nuts	45, 10 and 5
Hot-pressed nuts, blank and tapped, square,	4c. off list
Hot-pressed nuts, blank or tapped, hexagons,	4.40c. off list
C.p.c. and t. square or hex. nuts, blank or tapped	4.10c. off list
Washers*	6.50c. to 6.25c. off list

*F.o.b. Chicago and Pittsburgh.

The discount on machine, carriage and lag bolts is 5 per cent less than above for less than car lots. On hot-pressed and cold-punched nuts the discount is 25c. less per 100 lb. than quoted above for less than car lots.

Bolts and Nuts

(Quoted with actual freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Semi-finished hexagon nuts:	
⅞ in. and smaller, U. S. S.	80, 10 and 5
⅝ in. and larger, U. S. S.	75, 10 and 5
Small sizes, S. A. E.	80, 10, 10 and 5
S. A. E., ⅝ in. and larger	75, 10, 10 and 5
Stove bolts in packages	80, 10 and 5
Stove bolts in bulk	80, 10, 5 and 2½
Tire bolts	60 and 5

Semi-Finished Castellated and Slotted Nuts

(Actual freight allowed up to but not exceeding 50c. per 100 lb.)

(To jobbers and consumers in large quantities)

	Per 100 Net S.A.E.	U.S.S.		Per 100 Net S.A.E.	U.S.S.
¼-in.	$0.44	$0.44	¾-in.	$2.35	$2.40
5/16-in.	0.515	0.515	⅞-in.	3.60	3.60
⅜-in.	0.62	0.66	1-in.	5.65	5.80
7/16-in.	0.79	0.90	1⅛-in.	8.90	8.90
½-in.	1.01	1.05	1¼-in.	12.60	13.10
9/16-in.	1.38	1.42	1⅜-in.	18.35	18.35
⅝-in.	1.70	1.73	1½-in.	21.00	21.00

Larger sizes.—Prices on application.

Large Rivets

	Base Per 100 Lb.
F.o.b. Pittsburgh	$2.60
F.o.b. Cleveland	$2.60 to 2.70
F.o.b. Chicago	2.75

Small Rivets

	Per Cent Off List
F.o.b. Pittsburgh	70, 10 and 5
F.o.b. Cleveland	70 and 10 to 70, 10 and 5
F.o.b. Chicago	70, 10 and 10

Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb.)

	Per Cent Off List
Milled cap screws	80 and 10
Milled standard set screws, case hardened	80
Milled headless set screws, cut thread	80
Upset hex. head cap screws, U. S. S. thread,	80, 10 and 10
Upset hex. cap screws, S. A. E. thread,	80 and 10
Upset set screws	80, 10 and 10 to 80, 10 and 25
Milled studs	70 and 5

Chicago

Sheets Advance—Fabricators Busy—Low Pipe Bids at Detroit

CHICAGO, Nov. 24.—Local mills expect to participate heavily in 100,000 tons of shapes, plates and bars which will be required for freight cars bought within the last two weeks. Another 50,000 tons will be placed with the purchase of 3000 cars by the Santa Fe and 2000 by the Wabash, both of which are early possibilities. New business and specifications in finished products are well maintained and are reported as being equal to the average of the earlier weeks of the month. Producers sense in the present buying movement a tendency on the part of purchasers to give more consideration to the question of stocks than they have in the immediate past. Chicago's building industry continues to move forward at a rapid pace and figures now available show that the value of construction undertaken so far this year is in excess of the total for last year. The effect of this is clearly noticeable at the mills, and fabricators find their books well filled with prices strengthening.

Chicago mills booked about 15,000 tons of rails during the week. Track fastenings are active and several large orders have been placed. Among these was that of the Santa Fe, which called for 4,000,000 tie plates, 30,000 kegs of spikes and 7000 kegs of bolts. The distribution was made on the basis of the allocation of the rails, i.e., about 75 per cent to the Colorado Fuel & Iron Co. and 12 per cent each to the Illinois Steel Co. and the Inland Steel Co.

Steel ingot production is a shade above the 85 per cent mark, and 25 of the 35 steel works blast furnaces and 8 of the 10 merchant stacks are active in the Chicago territory. The pig iron market is firm and contracting for the first quarter is well under way, although spot demand has declined. Distress tonnage appearing on track is giving scrap dealers some concern and has resulted in a weaker undertone in the old material market.

Pig Iron.—Northern foundry iron is firm at $23, base, Chicago furnace, for shipment either during the remainder of this year or the first quarter of 1926. Reports are current of several scattered carlot sales at $23.50, base. When traced, however, it is found that the silicon content ranged from 2.75 to 3.25 per cent, or even higher, and that the buyers were willing to pay $1 premium instead of the usual 50c. for an additional 50 points of silicon. As a general thing, both sellers and makers find that shipments so far in November are running about equal to the corresponding period in October. The last few days, however, have witnessed a material drop both in buying and inquiry for spot iron. With the first quarter near at hand, some sellers expect spot buying to continue to decline. Another factor which may have some bearing on the situation is that both Christmas and New Year's Day fall on Friday, indicating that foundry melt will be curtailed to the extent of about four days during the holiday weeks. Many users are finding that their stocks are unbalanced, and while apparently there is no actual shortage of iron, furnaces with limited stocks to draw upon are experiencing difficulty at times in meeting the immediate requirements of customers. Forward contracting for the first quarter is well advanced at the present market quotations, and both buyers and sellers appear to be reluctant to commit themselves beyond that period. Charcoal iron is quiet and unchanged in price. Local distributors are now quoting Southern No. 2 foundry, base Sheffield furnace, at $22, and no sales are reported below that figure. Adding the barge and rail freight of $4.18, brings the Chicago delivered price to $26.18. Low phosphorus iron is unchanged, in a quiet market. Silvery is showing added strength, with 8 per cent quoted at $29.50, base Jackson County, for shipment this year and $30.50 for delivery during the first quarter. The delivered prices are $34.29 for 1925 and $35.29 for the first quarter. Although there is no immediate concern over the furnace coke situation, makers of pig iron are intently watching the trend of developments in the Eastern soft coal fields.

Quotations on Northern foundry, high phosphorus and malleable iron are f.o.b. local furnace, and do not include an average switching charge of 61c. per ton. Other prices are for iron delivered at consumers' yards.

Northern No. 2 foundry, sil. 1.75 to 2.25	$23.00
Northern No. 1 foundry, sil. 2.25 to 2.75	23.50
Malleable, not over 2.25 sil.	23.00
High phosphorus	23.00
Lake Superior charcoal, averaging sil. 1.50, delivered at Chicago	29.68
Southern No. 2 (all rail)	$26.01 to 27.01
Southern No. 2 (barge and rail)	26.18
Low phos., sil. 1 to 2 per cent, copper free	31.20 to 31.60
Silvery, sil. 8 per cent	34.29
Ferrosilicon, 14 to 16 per cent	45.25 to 45.75

Ferroalloys.—Sellers of 50 per cent ferrosilicon report that contracts for next year are well covered at $85, delivered. Ferromanganese and spiegeleisen are unchanged in a comparatively quiet market.

We quote 80 per cent ferromanganese, $122.56, delivered; 50 per cent ferrosilicon, $85, delivered; spiegeleisen, 18 to 22 per cent, $41.76, delivered.

Plates.—Chicago producers of plates, shapes and bars look for the early placing of 100,000 tons of material required for cars which have been contracted for within the last fortnight. The Santa Fe inquiry for 3000 cars is active and may be placed within the week. Bids are in for 2000 automobile cars for the Wabash, and builders expect that contracts will be placed within the next few days. The Palace Live Poultry Car Co. has placed 50 poultry cars with the Illinois Car & Mfg. Co. Rumors persist that the Burlington, the North Western and the Rock Island will include new car construction in budgets now being prepared. The Illinois Steel Co. has booked 6000 tons of steel for oil storage tanks, and a heavy tonnage is still pending. The Santa Fe will require 900 tons of tank material, and contracts for stills and tanks, which may be closed this week by the Standard Oil Co. at Casper, Wyo., will call for about 6000 tons. The mill quotation of 2.10c. on plates is firm and deliveries are said to be gradually extending.

The mill quotation is 2.10c., Chicago. Jobbers quote 3.10c. for plates out of stock.

Bars.—Demand for soft steel bars is still well maintained, with prices firm at 2.10c., Chicago. Makers of rail steel bars report that metal furniture makers and manufacturers of farm implements are still specifying freely and that mill operations continue at an unchanged rate. This commodity is still in good demand for reinforcement of concrete, although the tonnages now being placed are for the most part small. Prices of rail steel bars range from 2c. to 2.10c., Chicago. No sales of bar iron are reported at less than 2c., Chicago.

Mill prices are: Mild steel bars, 2.10c.; common bar iron, 2c., Chicago; rail steel bars, 2c. to 2.10c., Chicago.

Jobbers quote 3c. for steel bars out of warehouse. The warehouse quotation on cold-rolled steel bars and shafting are 3.60c. for rounds and hexagons and 4.10c. for flats and squares; 4.15c. for hoops and 3.65c. for bands.

Jobbers quote hard and medium deformed steel bars at 2.60c.

Wire Products.—With an increase in mill operations to about 70 per cent, producers find that they are barely able to keep pace with demand. Manufacturing trade has shown improvement, whereas specifications from the jobbing trade are substantially equal to those of the preceding week. With inventory taking close at hand jobbers will probably not increase their stocks at this time. Demand for practically all products has been better during the fall than it was last spring. Mill prices, which are steadier, but unchanged, are shown on page 1473.

We quote warehouse prices f.o.b. Chicago: No. 8 black annealed wire, $3.30 per 100 lb.; common wire nails, $3.05 per keg; cement-coated nails, $2.05 to $2.20.

Rails and Track Supplies.—Rail distributions made during the week added 12,000 to 15,000 tons to the bookings of Chicago producers. The Grand Trunk divided an order for 8000 tons between an Eastern independent and a local mill, the bulk of it being placed here. The St. Louis Southwestern is said to have

placed 2300 tons with the Inland Steel Co. and 4100 tons with the Illinois Steel Co. The Kansas City Southern split an order for 6000 tons, placing half of it with an Eastern maker and the other half with the Chicago mills. The Pere Marquette distribution has not been announced, although local mills expect to book between 8000 and 10,000 tons from that line. The Erie is said to have placed 6000 tons of rails with the Illinois Steel Co. The Chicago & Alton will soon make inquiry for about 10,000 tons of 100-lb. and 90-lb. rails and 1500 tons of track fastenings. The Inland Steel Co. has completed delivery of four boatloads to Duluth against a recent contract with the Great Northern. One local producer has booked 4000 tons of rail joints and 1500 tons of tie plates in miscellaneous lots. The Chicago, Milwaukee & St. Paul is inquiring for 300,000 tie plates. Bookings of light rails are in greater volume than for some time.

Standard Bessemer and open-hearth rails, $43; light rails, rolled from billets, 1.80c. to 1.90c., f.o.b. maker's mill.

Standard railroad spikes, 2.90c. to 3c. mill; track bolts with square nuts, 3.90c. to 4c. mill; steel tie plates, 2.25c. to 2.35c., f.o.b. mill; angle bars, 2.75c., f.o.b. mill.

Jobbers quote standard spikes out of warehouse at 3.55c., base, and track bolts, 4.55c., base.

Sheets.—Prices have again strengthened and all makers are quoting 4.70c., Gary or Indiana Harbor, for galvanized; 3.45c. for black, and 2.60c. for blue annealed. Local mills are booked to the first of the year and therefore contracts placed at the new schedules will be for delivery during the first quarter. The strengthening market is causing some users to buy further into the future.

Chicago delivered prices from mill, 3.50c. for No. 28 black, 2.65c. for No. 10 blue annealed and 4.75c. for No. 28 galvanized. Delivered prices at other Western points are equal to the freight from Gary plus the mill prices, which are 5c. per 100 lb. lower than the Chicago delivered prices.

Jobbers quote f.o.b. Chicago: 3.50c. base for blue annealed, 4.10c. base for black, and 5.25c. base for galvanized.

Structural Material.—A local mill has booked 1100 tons for the Pere Marquette Building, New Orleans. Fabricating shops in and close to Chicago are well booked, with average commitments of about three months. One large shop is said to have at least five months of work in sight. Shops in the eastern and southeastern portion of the Chicago district are not so well fortified and in few cases have bookings in excess of five to six weeks. Fabricators note a tendency for prices to stiffen. Projected tonnages are large and point to a well sustained demand. A building in the Chicago Loop will require 4000 tons, a local apartment building will call for 2500 tons, and a new athletic club tower building in this city will take a substantial tonnage.

The mill quotation on plain material is 2.10c., Chicago. Jobbers quote 3.10c. for plain material out of warehouse.

Bolts, Nuts and Rivets.—Expected advances have not as yet materialized and makers are said to be preparing contracts for the first quarter at prevailing prices. Prices are steady and are shown on page 1475.

Jobbers quote structural rivets, 3.50c.; boiler rivets, 3.70c.; machine bolts up to ⅞ x 4 in., 50 and 5 per cent off; larger sizes, 50 and 5 off; carriage bolts up to ⅝ x 4 in., 47½ off; larger sizes, 47½ off; hot-pressed nuts, square, tapped or blank, $3.25 off; hot-pressed nuts, hexagon, tapped or blank, $3.75 off; coach or lag screws, 55 and 5 per cent off.

Cast Iron Pipe.—Foreign competition brought out sharp bidding on 17,000 tons for Detroit. The lowest tender was $45.12, delivered, or the equivalent of $37.20, Birmingham, which was submitted on 4000 tons of 16-in. by B. Nicoll & Co., representing a European maker. Other bids were as follows: B. Nicoll & Co., 3300 tons of 6-in., $46.69 per ton delivered; 5700 tons, 8-in., $46.17; 4000 tons, 12-in., $45.32; American Cast Iron Pipe Co., 4000 tons, 16-in., $49.95; Lynchburg Foundry Co., 2000 tons, 12-in. and 2000 tons, 16-in., $45.30; United States Cast Iron Pipe & Foundry Co., 6 and 8-in., $47.95; 12 and 16-in., $45.95. If the United States company is awarded the entire contract, a price of $45.70 will govern. James B. Clow & Sons quoted $48.60 on 2000 tons, 6-in., 2000 tons, 8-in., 1000 tons, 12-in., and 1000 tons, 16-in.

We quote per net ton, f.o.b. Chicago, as follows: Water pipe, 4-in., $54.20; 6-in. and over, $50.20; Class A and gas pipe, $4 extra.

Billets.—Rolling billets, 4-in. and over, are firm at $35, Chicago. One producer reports a price of $37, but has made no sales at that figure.

Cold Finished Steel Bars.—Screw stock and shafting is firm at 2.50c., base, Chicago. Deliveries now extend from four to five weeks.

Reinforcing Bars.—With a seasonal lull developing, dealers have substantial order books against which they will continue to ship for some time to come. Notwithstanding the decline in business, it is the impression of the trade that a greater tonnage of bars was placed during the first two weeks of this month than during the corresponding period for a number of years back. There are still a good number of fair tonnages, which may be awarded before the first of the year, but new inquiries are confined almost wholly to small tonnage projects. Architects are busy, a fact pointing to a revival in inquiry for projects to be started in the spring. Billet steel reinforcing bars are firm at 2.60c., Chicago warehouse. Lettings include:

Stiefe Building, 180 East Delaware Avenue, Chicago, 600 tons of rail steel to the Inland Steel Co.

West Side High School, Indianapolis, Ind., 275 tons to H. J. Baker & Co.

Seneca Apartments, Sheridan Road, Chicago, 500 tons to the American System of Reinforcing.

Reservoir, Holland, Mich., 150 tons to the Concrete Steel Co.

North Moor Hotel, Chicago, 600 tons to the Barton Spiderweb System, Inc.

Pending work includes:

Addition to Calumet School, Chicago Board of Education, 600 tons. General contract awarded to the B. W. Construction Co.

Morrow Garage, Waukegan, Ill., 175 tons. General contract awarded to Tobias Jenson, Waukegan.

Power house, Sanitary District, Niles Center, Ill., 600 tons. John Griffiths & Sons Co., general contractor.

Old Material.—Distress tonnage is appearing on track in greater volume than dealers are able to handle it and several grades of scrap have declined 25c. to 50c. a ton. Jobbing foundries are said to be less active and are taking only such scrap as is needed for immediate use. A local mill which has been taking heavy melting steel at the rate of about 2000 tons a day has notified dealers for the second time this fall that shipments must be held up temporarily. A sale of 2000 tons of No. 1 wrought is reported at $15.50 a net ton. As a general thing the whole structure of the scrap market is leaning toward the weak side. Railroad lists are small and include 2000 tons advertised by the Chicago & Alton, 2500 tons by the Santa Fé and 3500 tons by the Chicago, Milwaukee & St. Paul.

We quote delivery in consumers' yards, Chicago and vicinity, all freight and transfer charges paid for all items except relaying rails, including angle bars to match, which are quoted f.o.b. dealers' yards:

	Per Gross Ton	
Iron rails	$18.50 to	$19.00
Cast iron car wheels	18.50 to	19.00
Relaying rails, 56 lb. to 60 lb.	25.00 to	26.00
Relaying rails, 65 lb. and heavier	26.00 to	31.00
Forged steel car wheels	20.00 to	20.50
Railroad tires, charging box size	19.50 to	20.00
Railroad leaf springs, cut apart	19.75 to	20.25
Rails for rolling	19.50 to	20.00
Steel rails, less than 3 ft.	19.75 to	20.25
Heavy melting steel	16.00 to	16.50
Frogs, switches and guards, cut apart	18.50 to	19.00
Shoveling steel	16.00 to	16.25
Drop forge flashings	12.00 to	12.50
Hydraulic compressed sheets	14.50 to	15.00
Axle turnings	14.50 to	15.00
Steel angle bars	19.50 to	20.00
Steel knuckles and couplers	18.75 to	19.25
Coil springs	20.00 to	20.50
Low phos punchings	18.00 to	18.50
Machine shop turnings	10.00 to	10.50
Cast borings	13.50 to	14.00
Short shoveling turnings	13.50 to	14.00
Railroad malleable	19.00 to	19.50
Agricultural malleable	17.50 to	18.00
	Per Net Ton	
Iron angle and splice bars	18.25 to	18.75
Iron arch bars and transoms	21.50 to	22.00
Iron car axles	27.00 to	27.50
Steel car axles	18.00 to	18.50
No. 1 busheling	13.00 to	13.50
No. 2 busheling	9.75 to	10.25
Pipes and flues	11.00 to	11.50
No. 1 railroad wrought	15.50 to	16.00
No. 2 railroad wrought	14.50 to	14.75
No. 1 machinery cast	18.25 to	18.75
No. 1 railroad cast	17.25 to	17.75
No. 1 agricultural cast	17.25 to	17.75
Locomotive tires, smooth	16.50 to	17.00
Stove plate	15.50 to	16.00
Grate bars	15.50 to	16.00
Brake shoes	14.75 to	15.25

San Francisco

Ocean Rates on Steel Drop $2, But Mill Prices on Plates and Shapes Advance $1

SAN FRANCISCO, Nov. 21 (*By Air Mail*).—Freight rate reductions of $2 a ton on plates, shapes and bars, and $3 a ton on tubular goods, applying on water shipments to California from Atlantic ports via the Panama Canal, have been made effective by practically all of the so-called conference steamship lines during the past week. This action places the so-called conference and non-conference rates on the same level. It has also brought out new c.i.f. quotations on both plates and shapes. While 2.15c., c.i.f. Coast ports, is understood to have been named on plates immediately after the lower freight rates were announced, most of the Eastern mills are now quoting 2.20c. to 2.25c., c.i.f. This is equivalent to a mill advance of $1 a ton over the quotations of a week ago. In shapes 2.25c. to 2.30c., c.i.f., is now being quoted by two of the leading producers, which also amounts to a mill advance of $1 a ton over previous quotations. Reinforcing bars remain unchanged at 2.35c., c.i.f. This strengthening of prices, while not surprising in itself, developed in rather an unexpected way, and has been the cause of some confusion during the week. General business is moderately active, but fresh inquiries, for the most part, are small.

Pig Iron.—Compared with last year, sales during the first ten months of 1925 have been slightly larger and more evenly distributed. Both inquiries and orders have fallen off recently, however, and no material improvement is expected until after the turn of the year. First quarter buying is still somewhat scattered. All quotations are firm.

*Utah basic	$27.00 to $28.00
*Utah foundry, sil. 1.75 to 2.25	27.00 to 28.00
**English foundry	26.00
**Belgian foundry	24.50 to 25.00
**Dutch foundry	24.00
**Indian foundry	24.00 to 25.00
**German foundry	25.00

*Delivered San Francisco.
**Duty paid, f.o.b. cars San Francisco.

Shapes.—Lettings for the week have been confined to small tonnages. Fresh inquiries for small tonnages are fairly numerous, but only one calling for more than 100 tons is known to have come into the market—550 tons for a bank in Honolulu. The 1400 tons required by the Atlantic, Gulf & Pacific Co. of Manila, for export, has been placed in the East with the two leading producers, and 100 tons of light angles has also been placed by this company with the Pacific Coast Steel Co. Eastern mills are now quoting 2.25c. to 2.30c., c.i.f. Coast ports, which in view of the recent reduction of $2 a ton on water freight rates, amounts to a mill advance of $1 a ton.

Plates.—While 2.15c., c.i.f. Coast ports, is understood to have been quoted following the freight rate reduction of $2 a ton by the conference steamship lines, most of the Eastern mills are now asking 2.20c. to 2.25c., c.i.f., which, as in the case of structural shapes, represents a mill advance of $1 a ton over the quotations of a week ago. The city of Seattle, Wash., will close bids Nov. 23 for about 1300 tons for a pipe line. No award is expected to be made in connection with the 1500 tons required by the San Joaquin Light & Power Co., Fresno, Cal., for at least two weeks, because of the technical nature of bids. Wood, instead of steel, will be used for the construction of a pipe line by the city of Auburn, Wash. The California Petroleum Co., San Francisco, has awarded 300 tons to the Steel Tank & Pipe Co., Berkeley, and 185 tons to the Western Pipe & Steel Co., San Francisco. The East Bay Water Co., Oakland, has placed 130 tons with the Steel Tank & Pipe Co. The Western Pipe & Steel Co. has booked 110 tons of blue annealed sheets for the Antioch, Cal., pipe line. The United States Engineers, Portland, Ore., are inquiring for 250 tons for a barge.

Bars.—Quotations on reinforcing bars are now fairly stable at 2.95c., base, per lb. on 250-ton lots, 3.10c. on carload lots, and 3.40c. on less than carload lots. Jobs calling for small tonnages are numerous. Among the recent lettings requiring 100 tons or more are the following:

Bank of Italy, San Jose, Cal., 325 tons, to Truscon Steel Co.
Hotel, Pacific Grove, Cal., 140 tons, to Gunn, Carle & Co.
Mangin-Otter Co., San Francisco, Cal., 100 tons, to Steel Service Co.

Warehouse Business.—Sales are moderately active, inquiries are small but numerous, and prices are firm. Business so far this month is said to be slightly better than it was a month ago.

Merchant bars, $3.30 base, per 100 lb.; merchant bars, ⅝ in. and under, rounds, squares and flats, $3.80 base, per 100 lb.; soft steel bands, $4.15 base, per 100 lb.; angles, ¼ in. and larger x 1½ in. to 2¾ in., inc., $3.30 base, per 100 lb.; channels and tees, ¾ in. to 2¾ in., inc., $3.90 base, per 100 lb.; angles, beams and channels, 3 in. and larger, $3.30 base, per 100 lb.; tees, 3 in. and larger, $3.30 base, per 100 lb.; universal mill plates, ¼ in. and heavier, stock lengths, $3.30 base, per 100 lb.; spring steel, ¼ in. and thicker, $6.30 base, per 100 lb.; wire nails, $3.50 base, per 100 lb.; cement coated nails, $3 base, per 100 lb.; No. 10 blue annealed sheets, $3.75 per 100 lb.; No. 28 galvanized sheets, $6 per 100 lb.; No. 28 black sheets, $4.75 per 100 lb.

Cast Iron Pipe.—Santa Ana, Cal., has awarded 188 tons of 4 and 6-in. Class B to the National Cast Iron Pipe Co. The city of Los Angeles, Cal., will close bids Nov. 24 for 1780 tons. Newport Beach, Cal., will close bids Nov. 23 for 1445 tons, and San Diego, Cal., will close bids Nov. 27 for 200 tons. Prices are unchanged at $50 to $52.50, water shipment, San Francisco.

Tin Plate.—Inquiries are beginning to come into the market. The Standard Oil Co. of California is inquiring for 175,000 base boxes for its 1926 requirements.

Rails and Track Supplies.—The Southern Pacific Co. has placed 1,500,000 tie plates, 29,000 kegs of track spikes and 3700 kegs of track bolts with unnamed mills. The Northwestern Pacific Railroad Co. has placed 400 kegs of track spikes with the United States Steel Products Co.

Ferroalloys.—Local importers have placed a number of small orders for English ferromanganese, which is quoted at $117.50, duty paid, incoming dock. Swedish ferrosilicon, 50 per cent, is quoted at $93, duty paid, incoming dock.

Coke.—Sales are small and inquiries few, although most of the local importers report that the tonnage placed so far this year is larger than it was a year ago. Importers quote as follows:

English beehive, $15 to $16 at incoming dock, and English by-product, $12 to $14; German by-product, $11.50 to $12.

St. Louis

Pig Iron Advances—Granite City Maker Sells 35,000 Tons of Basic

ST. LOUIS, Nov. 24.—The Midland Coke & Iron Co., formerly the St. Louis Coke & Iron Co., sold 35,000 tons of basic iron and several thousand tons of foundry grades during the week for first quarter shipment, and is now completely committed for that delivery. It has not opened its books for second quarter. The principal basic sales were 25,000 tons to an east side melter and 7500 tons to a west side user. There is still urgent demand for spot iron, and some melters are willing to pay a premium for it. The Granite City maker has advanced its price to $23.50 to $24, furnace, with none to sell. Northern iron is $23.50, base Chicago, and Southern ranges from $21 to $22, base Birmingham, the lower price being quoted by Tennessee producers.

We quote delivered consumers' yards, St. Louis, as follows, having added to furnace prices $2.16 freight from Chicago, $4.42 from Birmingham, all rail, and 81c. average switching charge from Granite City:

Northern fdy., sil. 1.75 to 2.25	$25.66
Northern malleable, sil. 1.75 to 2.25	25.66
Basic	25.66
Southern fdy., sil. 1.75 to 2.25	$25.42 to 26.42
Granite City iron, sil. 1.75 to 2.25	24.31 to 24.81

Finished Iron and Steel.—A steady, consistent flow of orders, none of them large, but forming a satisfactory total, are being received from warehouse interests and manufacturing users of steel. The Midcontinent oil fields are showing renewed life, and encouraging orders are coming from that section. Small orders for structural shapes are being received from Oklahoma fabricators. Locally, new building is at a lower rate than for some time, and fabricators are in need of orders.

For stock out of warehouse we quote: Soft steel bars, 3.15c. per lb.; iron bars, 3.15c.; structural shapes, 3.25c.; tank plates, 3.25c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, cold rolled, one pass, 4.50c.; galvanized sheets, No. 28, 5.50c.; black corrugated sheets, 4.65c.; galvanized, 5.65c.; cold-rolled rounds, shafting and screw stock, 3.75c.; structural rivets, 3.65c.; boiler rivets, 3.85c.; tank rivets, ⅞ in. diameter and smaller, 70 per cent off list; machine bolts, 55 per cent; carriage bolts, 50 per cent; lag screws, 60 per cent; hot pressed nuts, square, $3.50; hexagon, blank or tapped, $4 off list.

Coke.—The market is exceedingly active, despite warm weather. Foundry coke is in good demand. The anthracite situation in the East has increased the call for domestic grades, and inquiries continue to come from Canada.

Old Material.—Heavy melting and shoveling steel declined another 50c. this week, and dealers are cancelling all expired contracts. The two largest consumers of these items in the district are well covered for the remainder of the year at least, while one company has requested dealers to withhold shipments against contracts. The only other changes on the list are in heavy axles and tire turnings and No. 2 railroad wrought, which are 25c. lower, and in No. 1 railroad cast, which is 25c. higher. New railroad lists include: Union Pacific, 2650 tons; St. Louis Southwestern, 13 carloads; St. Louis-San Francisco, 1800 tons; Missouri Pacific, 1000 tons; Gulf Coast Lines, 500 tons, and Standard Oil Co. at Wood River, Ill., 200 tons.

We quote dealers' prices f.o.b. consumers' works, St. Louis industrial district and dealers' yards, as follows:

Per Gross Ton

Iron rails	$15.00 to $15.50
Rails for rolling	19.25 to 19.75
Steel rails less than 3 ft.	19.25 to 19.75
Relaying rails, 60 lb. and under	24.00 to 25.00
Relaying rails, 70 lb. and over	30.00 to 31.00
Cast iron car wheels	18.00 to 18.50
Heavy melting steel	15.75 to 16.25
Heavy shoveling steel	15.50 to 16.00
Frogs, switches and guards cut apart	18.50 to 19.00
Railroad springs	19.00 to 19.50
Heavy axles and tire turnings	13.25 to 13.75
No. 1 locomotive tires	17.00 to 17.50

Per Net Ton

Steel angle bars	15.50 to 16.00
Steel car axles	18.00 to 18.50
Iron car axles	25.25 to 25.75
Wrought iron bars and transoms	20.00 to 20.50
No. 1 railroad wrought	13.50 to 14.00
No. 2 railroad wrought	14.00 to 14.50
Cast iron borings	11.50 to 12.00
No. 1 busheling	12.50 to 13.00
No. 1 railroad cast	15.50 to 16.00
No. 1 machinery cast	17.00 to 17.50
Railroad malleable	15.00 to 15.50
Machine shop turnings	9.00 to 9.50
Bundled sheets	9.25 to 9.75

Birmingham

Demand for Pig Iron and Coke Recedes —New Sheet Mill Completed

BIRMINGHAM, Nov. 24.—While sales have declined, furnaces are virtually out of the market and the volume of inquiry is good, with spot sales bringing $1 and $2 premiums. The ruling price is $21 per ton, base Birmingham, for No. 2 foundry. Probable output in the first quarter of the coming year is well committed and indications point to further buying for that delivery. Two blast furnaces are being repaired and will be started up again before the end of the year. Yards are pretty well cleared of surplus stock. Though extreme weather is not far off, there are no indications of curtailment in the operations of large melters. Shipment of pig iron outside this district has increased recently, following the resumption of water and rail service, which was interrupted by low water in rivers. Quotations for second quarter have not been announced, though it is believed that deliveries on some of the business now on books will lap over into that period.

We quote per gross ton, f.o.b. Birmingham district furnaces, as follows:

No. 2 foundry, 1.75 to 2.25 sil.	$21.00 to $22.00
No. 1 foundry, 2.25 to 2.75 sil.	21.50 to 23.00
Basic	21.00
Charcoal, warm blast	30.00 to 32.00

Rolled Steel.—The new sheet mill of the Tennessee Coal, Iron & Railroad Co. is now being manned and will soon be in full operation. New business in rails, track accessories, structural steel, plates, wire and nails, is in good volume. All Southern railroads, as well as several in the Southeast and Southwest, have placed orders for rails and fastenings with the Tennessee Coal, Iron & Railroad Co. Embargoes on railroads in Florida have been partially removed and shipments in that direction are encountering less delay. A large tonnage of structural steel is being fabricated for that State. Fabricating plants are operating at capacity. Soft steel bars are quoted at 2.15c. to 2.25c., tank plates at 2c. to 2.10c., and structural shapes, 2.05c. to 2.15c., base Birmingham.

Cast Iron Pipe.—There has been no recession in the operations of cast iron pipe shops and business is still coming in, winter buying being up to expectations. Prices are firmly maintained at $42, Birmingham, on the 6-in. and larger sizes. Soil pipe and fittings production is somewhat steadier.

Coke.—While by-product coke plants and many of the beehive ovens in the district are in full operations, demand has eased up and prices are weaker. Orders on hand call for steady delivery for some time to come. No large tonnages of coke, however, have been placed for distant delivery. With exception of one or two of the large iron and steel companies, there is no surplus stock on yards. Foundry coke is bringing $5.75, Birmingham.

Old Material.—Demand is active, deliveries are steady, and dealers with large yard forces are busy. A few sales are reported at the recent advance of $1 per ton.

We quote per gross ton, f.o.b. Birmingham district yards, as follows:

Cast iron borings, chemical	$15.00 to $16.00
Heavy melting steel	14.00 to 14.50
Railroad wrought	13.00 to 13.50
Steel axles	19.00 to 20.00
Iron axles	18.00 to 19.00
Steel rails	14.00 to 14.50
No. 1 cast	17.00 to 17.50
Tramcar wheels	17.00 to 17.50
Car wheels	16.00 to 16.50
Stove plate	14.00 to 14.50
Machine shop turnings	8.00 to 8.50
Cast iron borings	8.00 to 8.50
Rails for rolling	17.50 to 18.00

Buffalo

Pig Iron Firmer—Large Bookings in Finished Steel—Old Material Strong

BUFFALO, Nov. 24.—Demand is light but the market is firmer than it has been in many months. The absolute minimum quotation is $21, but $22 is being named also. One furnace is quoting $22 on prompt iron while another is asking that price for the fourth quarter. Aggregate inquiry is probably less than 5000 tons, except for some offerings from the West, among which is 5000 tons of foundry iron. This iron, however, will not be placed in this district. All the furnaces have good fourth quarter order books and fair commitments for the first quarter. From the trend of present prices it appears as if $22 will soon rule as the minimum going quotation. Full silicon differentials are being asked and obtained. Pressure for deliveries is strong.

We quote prices f.o.b. gross ton, Buffalo, as follows:

No. 2 plain, sil. 1.75 to 2.25	$21.00 to $22.00
No. 2X foundry, sil. 2.25 to 2.75	21.50 to 22.50
No. 1 foundry, sil. 2.75 to 3.25	22.50 to 23.50
Malleable, sil. up to 2.25	21.00 to 22.00
Basic	20.00 to 20.50
Lake Superior charcoal	29.28

Finished Iron and Steel.—Mill representatives say that the outlook for increased business is exceptionally good. One states that it has more tonnage on its books than at any time since 1920, and that present bookings, together with a large current inquiry for the first time in many months, indicate a shortage of steel products in the first quarter. Steel bars are being quoted at 2.265c. to 2.365c., delivered Buffalo. Most of the mills have not opened their books for first quarter. Shapes are still 2.165c. to 2.265c., Buffalo. Heavy bar specifications have been received during the current quarter and mill operations are averaging around 90 per cent. The reinforcing bar market is active. A 300-ton school has been let and a building for the Y. W. C. A. will require 150 tons. Sheet makers have advanced black sheets to 3.35c., base Pittsburgh, and automobile sheets to 4.50c. Inquiry in sheets for the first quarter is heavy. A local maker is running all of its 18 mills.

Warehouse prices are being quoted as follows: Steel bars, 3.25c.; steel shapes, 3.35c.; steel plates, 3.35c.; No. 10 blue annealed sheets, 3.80c.; No. 28 black sheets, 4.75c.; No. 28 galvanized, 5.45c.; cold rolled shapes, 4.40c.; cold rolled rounds, 3.95c.; wire nails, 4c.; black wire, 4.05c.

Old Material.—Just one mill is actively engaged in buying heavy melting steel. It is endeavoring to meet its requirements at $18 and is getting some material at this level, but dealers believe that a higher price will be necessary to obtain a tonnage. Strictly No. 1 heavy melting steel is hard to buy under $19 to $19.50. Sales of low phosphorus, No. 1 grade, have been made during the week at $21.50 to $22.50, and specialties, including angle bars and short rails, have been sold at the same figure. Some small purchasing of malleable has been done and demand for turnings and borings has been good with $13.50 paid generally. Small sales of cast have been made at $17.50 to $18. Valley and Cleveland buyers have been inquiring actively.

We quote prices f.o.b. gross ton, Buffalo, as follows:

Heavy melting steel	$19.00 to $19.50
Low phosphorus	21.50 to 22.50
No. 1 railroad wrought	16.50 to 17.00
Car wheels	17.50 to 18.00
Machine shop turnings	12.50 to 13.50
Cast iron borings	13.00 to 13.50
No. 1 busheling	17.50 to 18.00
Stove plate	15.00
Grate bars	14.50 to 15.00
Hand bundled sheets	13.00 to 13.50
Hydraulic compressed	16.50 to 17.50
No. 1 machinery cast	17.50 to 18.00
Railroad malleable	20.00 to 21.00
No. 1 cast scrap	17.50 to 18.00
Iron axles	26.00 to 27.00
Steel axles	20.00 to 21.00

Cincinnati

Pig Iron Sales Total 35,000 Tons—Large Gas Holders Placed

CINCINNATI, Nov. 24.—Demand for pig iron has been well sustained during the past week and prices have advanced on Northern foundry and silvery grades. Sales totaled more than 35,000 tons, thereby setting a high mark for the year. The largest order consisted of approximately 25,000 tons of basic iron for delivery in January and February to a nearby steel company. It is reported, but not confirmed, that this business was divided between southern Ohio and Valley furnaces at, or near, $20, furnace. Prices of Northern foundry iron in the Ironton district are tending upward and some lots have been sold at $21.50, base Ironton, but $21 better represents the market. Tennessee iron is steady at $20, base Birmingham. Little Alabama iron is being offered and quotations range from $21 to $22, base Birmingham. Jackson County silvery furnaces have increased their prices $1 for delivery this year, thus placing 8 per cent at $29.50, with silvery iron for the first quarter selling at $1 above the new schedule. The Saginaw Products Co., Saginaw, Mich., has purchased 5000 tons of foundry iron from Lake producers, while a central Ohio melter has taken 3000 tons from a southern Ohio seller. The Peerless Mfg. Co., Louisville, Ky., is reported to have closed for 1000 tons of Tennessee Iron. A local broker has sold 1000 tons of ferrophosphorus to a consumer in this territory. The Belfont Steel & Wire Co., Ironton, Ohio, will blow in its Sarah furnace within a month. The American Rolling Mill Co. is considering putting in its second furnace at Ashland, Ky.

Based on freight rates of $3.69 from Birmingham and $2.27 from Ironton, we quote f.o.b. Cincinnati:

Alabama fdy., sil. 1.75 to 2.25 (base)	$24.69 to $25.69
Alabama fdy., sil. 2.25 to 2.75	25.19 to 26.19
Tennessee fdy., sil. 1.75 to 2.25	24.69
Southern Ohio silvery, 8 per cent	31.77
Southern Ohio fdy., sil. 1.75 to 2.25	23.27 to 23.77
Southern Ohio, malleable	23.27

Reinforcing Bars.—The only pending project of importance is a building for the Miami Athletic Club, Miami, Fla., which will take approximately 900 tons. J. J. McDevitt, Charlotte, N. C., has been awarded a general contract by the Southern Railway for an office building at Charlotte, but the bar tonnage is not known. Plans for a factory building for the Duro Pump Manufacturing Co., Dayton, Ohio, have been drawn by Schenk & Williams, Dayton, and bids for the bars will be taken within the next month. Prices, although unchanged, are gaining in strength. New billet bars are steady at 2c., Cleveland, and rail steel bars are bringing 1.90c., mill.

Warehouse Business.—A general increase in sales, most noticeable in structural steel and sheets, has enlivened the market. The improvement is attributed principally to the favorable weather which has prevailed the past week. A slight advance in extras on cold-rolled bars was put into effect today. Otherwise prices remain the same.

Cincinnati jobbers quote: Iron and steel bars, 3.30c.; reinforcing bars, 3.30c.; hoops, 4c. to 4.25c.; bands, 3.95c.; shapes, 3.40c.; plates, 3.40c.; cold-rolled rounds and hexagons, 3.85c.; squares, 4.35c.; open-hearth spring steel, 4.75c. to 5.75c.; No. 10 blue annealed sheets, 3.60c.; No. 28 black sheets, 4.10c.; No. 28 galvanized sheets, 5.25c.; No. 9 annealed wire, $3 per 100 lb.; common wire nails, $2.95 per keg base; cement coated nails, $2.40 per keg; chain, $7.55 per 100 lb. base; large round head rivets, $3.75 base; small rivets, 65 per cent off list. Boiler tubes: prices net per 100 ft. lap welded steel tubes, 2-in., $18; 4-in., $38; seamless, 2-in., $19; 4-in., $39.

Bars, Plates and Shapes.—Sales are holding up well compared with those in October. While a few first quarter contracts have been closed, mills are not eager to book business for next year at present prices. On the other hand, consumers realize that it is becoming difficult to secure material in less than six to eight weeks, and consequently want to accumulate stock in anticipation of future requirements. When a company is successful in securing prompt delivery, it is usually compelled to pay a premium. Bars are selling at 2c. to 2.10c., Pittsburgh, with an increasing number of orders being taken at the latter price. Plate sales have shown considerable improvement, with 1.90c., Pittsburgh, the ruling quotation. The Louisville & Nashville Railroad has bought 800 tons of plates for immediate delivery from the Tennessee Coal, Iron & Railroad Co. Shapes have been established on a basis of 2c., Pittsburgh, and pressure from consumers has failed to weaken that price. Fabricators have increased their operations, particularly in the gas holder field. The Stacey Brothers Gas Construction Co., Cincinnati, will erect a holder at Buffalo, requiring approximately 5000 tons. The St. Louis County Gas Co. has awarded a gas holder, calling for 1700 tons, to Stacey Mfg. Co., Cincinnati. The Louisville & Nashville Railroad will take bids until Nov. 30 on a number of bridges, totaling 2000 tons.

Sheets.—With mills willing to accept first quarter orders, consumers have begun to anticipate their 1926 requirements. A pronounced demand for galvanized sheets has strengthened the 4.60c., Pittsburgh, quotation which first appeared a week ago. More liberal specifications and orders for black sheets have enabled producers to raise their schedule to 3.35c., base Pittsburgh, while blue annealed sheets are firm at 2.50c., Pittsburgh. Although sales of automobile sheets have fallen off, prices are well established at 4.50c., base Pittsburgh. Mills in this territory are maintaining operations at 87 per cent of capacity.

Wire Goods.—Jobbers are anticipating their future needs and have been ordering common wire nails, barbed wire and fencing in considerable quantities.

November is expected to compare favorably with October in the total volume of sales. Common wire nails are being sold at $2.65 base per keg, Ironton, with some mills holding to $2.65, Pittsburgh. The prevailing quotation on plain wire is $2.50, base per 100 lb. Ironton or Pittsburgh. Operations of mills in this territory are at 75 per cent of capacity.

Coke.—Decreased demand for domestic coke is offset by the increased movement of by-product foundry which is 20 per cent above that in October. An Indiana by-product coke manufacturer has all of its 1926 output of foundry grades contracted for on a monthly specification basis. A southern Ohio furnace is expected to close this week for approximately 15,000 tons of furnace coke for first quarter delivery. Although there have been no outstanding sales, considerable activity is noted in Wise County coke. Prices remain unchanged, with the exception of Connellsville foundry which is $2 less than a week ago.

Based on freight rates of $2.14 from Ashland, Ky., $3.53 from Connellsville, $2.90 from New River ovens and $2.59 from Wise County ovens, we quote f.o.b. Cincinnati: Connellsville foundry, $9.53 to $11.03; Wise County foundry, $8.09 to $9.59; New River foundry, $9.90 to $11.40; by-product foundry, $10.14.

Old Material.—There has been a temporary lull in the local market, but prices have not suffered. Mills are delaying further purchases until they ascertain the volume of their bookings for first quarter. Southern consumers have been active buyers of cast iron grades. The Big Four railroad has a list of 1700 tons, of which 700 tons consists of rails.

We quote dealers' buying prices, f.o.b. cars, Cincinnati:

	Per Gross Ton	
Heavy melting steel	$15.00 to	$15.50
Scrap rails for melting	15.00 to	15.50
Short rails	19.00 to	19.50
Relaying rails	28.00 to	28.50
Rails for rolling	16.00 to	16.50
Old car wheels	14.50 to	15.00
No. 1 locomotive tires	17.50 to	18.00
Railroad malleable	16.50 to	17.00
Agricultural malleable	16.00 to	16.50
Loose sheet clippings	10.00 to	10.50
Champion bundled sheets	12.00 to	12.50
Per Net Ton		
Cast iron borings	9.50 to	10.00
Machine shop turnings	8.50 to	9.00
No. 1 machinery cast	20.00 to	20.50
No. 1 railroad cast	16.00 to	16.50
Iron axles	23.50 to	24.00
No. 1 railroad wrought	12.50 to	13.00
Pipes and flues	10.00 to	10.50
No. 1 busheling	11.50 to	12.00
Mixed busheling	10.00 to	10.50
Burnt cast	10.50 to	11.00
Stove plate	11.50 to	12.00
Brake shoes	11.50 to	12.00

Boston

Pig Iron and Coke Quiet—Steel Scrap Lower

BOSTON, Nov. 24.—The pig iron market remains quiet. Activity centers in more or less special analysis iron and in lots ranging in size from carlots to 200 tons or 300 tons. Western Pennsylvania furnaces and holders of foreign iron did the bulk of business the past week. Western Pennsylvania iron sells on a delivered base equivalent to that for Buffalo iron. Indian iron is selling at $23 to $23.50, on dock, duty paid. Recent sales include a round tonnage of Buffalo iron, silicon under 1.25, for first quarter shipment, at $21, furnace. The aggregate New England melt is larger than at any previous time this year, but most foundries are amply covered on iron for the remainder of 1925, and some of them through the first quarter. Should the melt increase, however, numerous foundries would be obliged to buy more iron. For the present melters are content to sit tight and await price developments.

We quote delivered prices on the basis of the latest sales as follows, having added $3.65 freight from eastern Pennsylvania, $4.91 from Buffalo, $5.92 from Virginia, and $9.60 from Alabama:

East. Penn., sil. 1.75 to 2.25	$25.65
East. Penn., sil. 2.25 to 2.75	26.15
Buffalo, sil. 1.75 to 2.25	$25.91 to 26.91
Buffalo, sil. 2.25 to 2.75	26.41 to 27.41
Virginia, sil. 1.75 to 2.25	29.92
Virginia, sil. 2.25 to 2.75	30.42
Alabama, sil. 1.75 to 2.25	30.60
Alabama, sil. 2.25 to 2.75	31.10

Finished Material.—Mills are talking higher prices on plates, but are still accepting business at 1.60c., base Pittsburgh, or 1.965c., delivered. Shapes are still quoted at 1.90c. to 2c., base Pittsburgh, or 2.265c. to 2.365c., delivered, with current buying mostly at 2.265c. Fabricators report a pronounced falling off in prospective tonnages, even jobs requiring less than 100 tons being scarce. Not much improvement in the situation is expected until after Jan. 1. Some bar business has been booked here the past week at 2.10c., base Pittsburgh, or 2.465c., delivered, but 2c., base Pittsburgh, or 2.365c., delivered, can still be done. Mills are quoting sheets on the following Pittsburgh bases: black, 3.35c. per lb.; blue annealed, 2.50c.; galvanized, 4.60c.; automobile, 4.50c.

Warehouse Business.—Local warehouses have advanced black sheets from $4.95, base, per 100 lb., to $5.25, and galvanized from $6, base, to $6.25. Blue annealed sheets are unchanged at $3.91½, base, per 100 lb. Indications are that warehouse sales of iron and steel this month will not quite equal those for October, the largest for any month in two years.

Warehouse prices on finished steel follow:

Steel.—Soft bars, $3.265 per 100 lb.; flats, $4.15; plain concrete bars, $3.265; deformed concrete bars, $3.265 to $3.54; angles under 3-in., $3.265; tees and zees, $3.415; structurals, angles and beams, $3.365; plates, ¼-in. and heavier, $3.365; ⅜-in., $3.565; tire steel, $4.50 to $4.75; open-hearth spring steel, $5 to $10; crucible spring steel, $12; bands, $4.015 to $5; hoop steel, $5.50 to $6; cold rolled, rounds and hexagons, $3.95; squares and flats, $4.45; toe calk steel, $6.

Iron.—Refined bars, $3.265 per 100 lb.; best refined, $4.60; Wayne, $5.50; Norway, rounds, $6.60; squares and flats, $7.10.

Coke.—Because of the continued mild weather and less pressure to buy, New England by-product coke producers have made inroads on back orders, and are actively soliciting domestic fuel and foundry coke business. Foundries have been urged to anticipate requirements, but specifications against 1925 contracts are not increasing. Some consumers of domestic coke, failing to secure full requirements from New England ovens, have taken advantage of the drop in Connellsville district fuel and have bought there. Both the New England Coal & Coke Co. and the Providence Gas Co. quote by-product foundry coke at $13, delivered within a $3.10 freight rate zone.

Old Material.—Buying of old material is largely against old contracts, as there has been a sharp slump in new contracting. Prices paid for some kinds of material varied widely last week. For instance, sales of heavy melting steel were recorded at $13 to $13.50, on cars shipping point, at $12.50 to $13.25, and at $12.50 to $13. In instances where prices were below $13, buying was mostly for Worcester, Mass., and Phillipsdale, R. I., delivery. The market today seems to be $12.50 to $13.25, or 50c. a ton lower than a week ago. Machine shop turnings are easier in price and the trend of cast iron borings is downward. Recent sales of chemical borings were made at $11.50, $12, $12.25 and $12.50, on cars shipping point. The armory, Springfield, Mass., last week sold a local dealer 400 net tons of rifle barrels at 65c. per 100 lb., or slightly better than $14.50 a ton, and 500,000 lb. of rifle parts to another local firm at 58c. per 100 lb. Buyers had to load the material.

The following prices are for gross ton lots delivered consuming points:

Textile cast	$20.00 to $20.50
No. 1 machinery cast	19.50 to 20.00
No. 2 machinery cast	15.50 to 16.50
Stove plate	14.50 to 15.00
Railroad malleable	19.50 to 20.00

The following prices are offered per gross ton lots f.o.b. Boston rate shipping points:

No. 1 heavy melting steel	$12.50 to $13.25
No. 1 railroad wrought	13.50 to 13.75
No. 1 yard wrought	12.50 to 13.00
Wrought pipe (1 in. in diameter, over 2 ft. long)	12.00 to 12.50
Machine shop turnings	9.50 to 10.00
Cast iron borings, chemical	12.00 to 12.50
Cast iron borings, rolling mill	9.75 to 10.25
Blast furnace borings and turnings	9.00 to 9.50
Forged scrap	10.00 to 10.50
Bundled skeleton, long	10.00 to 10.50
Forged flashings	10.00 to 10.50
Bundled cotton ties, long	10.00 to 10.25
Bundled cotton ties, short	10.00 to 10.50
Shafting	18.25 to 18.75
Street car axles	18.00 to 18.50
Rails for rerolling	12.00 to 13.50
Scrap rails	12.50 to 13.00

New York

First Quarter Sheet Sales at Advanced Prices—Pig Iron Demand Improves

NEW YORK, Nov. 24.—Moderate improvement in the demand for pig iron is reflected in sales in this district for the week, which totaled close to 8000 tons. While the reaction in coke prices has removed the incentive to seek protection on forward needs, there is no apparent tendency on the part of melters to withhold purchases in the belief that pig iron may again recede. Consumers are impressed with the fact that advances in pig iron were moderate in contrast with the sharp rise in coke and, moreover, furnaces are comfortably booked. Current pressure for deliveries would indicate that melt is increasing and that stocks on foundry yards are small. The amount of open inquiry is not large, probably not in excess of 4000 tons, but the accumulating day-to-day needs of melters are being reflected in considerable spot buying. At the same time, a number of the larger users, as well as smaller buyers, have not yet covered for first quarter. A Phillipsburg, N. J., plant has bought 1000 tons of low phosphorus No. 1X for November and December delivery. A local melter is in the market for 500 tons of foundry. The price situation is substantially unchanged on domestic iron except that it is increasingly difficult to obtain eastern Pennsylvania iron for less than $23, furnace, for No. 2 plain. Prices on foreign iron vary widely, with German iron bringing $21 to $22 and English material $21.50 to $22.50, duty paid port of entry. The Robesonia furnace, Robesonia, Pa., was blown out for relining Nov. 19, but is expected to resume in 30 days. The No. 2 furnace at Port Henry, N. Y., will be lighted Nov. 28. The new Troy, N. Y., stack will probably not get into blast until February.

We quote delivered in the New York district as follows, having added to furnace prices $2.52 freight from eastern Pennsylvania, $4.91 from Buffalo and $5.54 from Virginia:

East. Pa. No. 2, sil. 1.75 to 2.25	$25.02 to $25.52
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	25.52 to 26.02
East. Pa. No. 1X fdy., sil. 2.75 to 3.25	26.02 to 26.52
Buffalo, sil. 1.75 to 2.25	25.91
No. 2 Virginia, sil. 1.75 to 2.25	29.54

Ferroalloys.—Unusual quietness for this time of year pervades the ferromanganese market. There have been very few sales for next year's consumption, about 400 to 500 tons, none of this in large quantities. One lot was for 100 tons. There have also been a few sales of carload and small lots for this year's delivery. Undoubtedly heavier buying for 1926 is inevitable. All sales have been at $150, seaboard basis. An unusual sale was a carload for delivery in June next year. The spiegeleisen market is moderately active. One sale of 1000 tons of British spiegeleisen is noted for delivery in the first half and there have been sales of the domestic brand up to 750 tons. The domestic price is still $34, furnace.

Finished Iron and Steel.—The greatest selling activity has been in sheets, the recent advances having stirred many buyers to cover for their first quarter requirements. Contracts have been made by independent makers at the new prices, namely, 2.50c. on blue annealed, 3.35c. on black and 4.60c. on galvanized. Some orders for black sheets at 3.25c., Pittsburgh, have been entered by mills for December delivery with the prospect that deliveries will actually extend into January, but otherwise there appears to be no deviation from the new prices, especially on first quarter business. Most of the sheet mills are well filled up for the rest of the year, the advances having caused consumers to specify fully on their contracts. There is increasing firmness in other lines, but no formal price changes except that concessions are harder to obtain even by large buyers. On steel pipe the extra discounts of 2½ and 5 per cent which were granted to large distributors have been in many cases withdrawn. The effort to establish a 2.10c. price on steel bars for first quarter has not succeeded because some mills are taking contracts at 2c. for that period, but for any delivery nothing less than 2c. is now heard of. Structural shapes are firm at 1.90c., Pittsburgh, with occasional exceptions, and 2c. is being asked by some mills for first quarter. The $5.50 quotation on tin plate, announced by the leading interest for next year, seems to be satisfactory to consumers, but some of the independent makers were disappointed that a higher price was not named and some of them have advised buyers that there will be no concessions even to large users. Such concessions, amounting to as much as 25c. per box, were frequent in the past year. Structural steel tonnage continues heavy, particularly in the New York territory. There have been no outstanding orders or inquiries for railroad equipment during the week. The Eastern plate situation continues weak. Although the mills are gaining slightly in orders, the volume is not yet sufficient to support a price advance. Some Eastern mills are getting orders from the Central West on the basis of 1.90c., Pittsburgh, which nets them about the same at mill as 1.60c., Pittsburgh, for Eastern shipment. Except for reports of a few quotations of 1.55c., Pittsburgh, on universal plates, the plate market remains at 1.60c. for tonnage of any size.

We quote for mill shipments, New York delivery, as follows: Soft steel bars, 2.34c. to 2.44c.; plates, 1.94c. to 2.04c.; structural shapes, 2.24c. to 2.34c.; bar iron, 2.24c.

Warehouse Business.—Demand continues at a high level, but the size of orders, particularly in the case of structural steel business, is slightly smaller. Bars and shapes are fairly firm at 3.24c. and 3.34c. per lb. respectively, but the tendency to shade a few cents per pound on desirable business has not entirely disappeared. Black sheets are firm at 4.35c. per lb. base, with prospects of an advance to a basis of 4.50c. per lb. before long, following the galvanized market, which has been moved up another step to a minimum basis of 5.50c. per lb. Bolts and screws are exhibiting more stability in discounts than for some time. Wrought iron and steel pipe discounts are being more generally adhered to than in the past, but slight concessions are still obtainable. Non-ferrous metals have registered a slight decline in several instances, tin, copper and zinc being among those affected. Prices on page 1506. We quote boiler tubes per 100 ft. as follows:

Lap welded steel tubes, 2-in., $17.33; seamless steel, 2-in., $20.24; charcoal iron, 2-in., $25; 4-in., $67.

Cast Iron Pipe.—Continued activity in the demand for gas pipe is reported, but the water pipe market is entering upon the usual seasonal dullness and further large purchasing is not expected until the beginning of the spring buying movement in January. The 1000 tons of water pipe for Pleasantville, N. J., was awarded to the low bidder, the United States Cast Iron Pipe & Foundry Co. The Pont-a-Mousson Works was low bidder on the recent opening of bids by Providence, R. I., on 1400 tons of pipe, but all bids were rejected and a second set of bids will be taken. The soil pipe market continues quiet and discounts are unchanged.

We quote pressure pipe per net ton, f.o.b. New York, in carload lots, as follows: 6-in. and larger, $50.60 to $52.60; 4-in. and 5-in., $55.60 and $57.60; 3-in., $65.60 to $67.60, with $5 additional for Class A and gas pipe. Discounts both of Northern and of Southern makers of soil pipe, f.o.b New York, are as follows: 6-in., 45 to 45¾ per cent off list; heavy, 55 to 55¾ per cent off list.

Coke.—The downward movement of prices continues, with furnace coke quoted this week at $4.50 per ton and foundry ranging from $6.50 to $7 per ton. Domestic sizes are priced at $7.50 to $8 per ton, Connellsville. Further sales of foreign coke are considered by brokers to be out of the question with the market in its present state. Foundries in this district are reported to be carrying stocks of coke to the limit of their storage capacity and with plenty of supply in sight there is no apparent interest in further buying at present. By-product continues unchanged at $11.52 per ton, delivered Newark or Jersey City, N. J.

Old Material.—No. 1 heavy melting steel continues firm at $16.75 to $17.50 per ton, delivered eastern Pennsylvania with occasional buying at slight advances. On this grade shipments are going forward from this district to Bethlehem and Conshohocken, Pa. Evidently the recent purchase by the Lukens Steel Co. is being

supplied for the greater part from stocks in nearby yards, although $17.50 per ton, delivered, is reported being offered for this delivery. The contract of a Claymont, Del., consumer is understood to be largely for ship scrap being furnished by the Steel Scrap Corporation. Most grades of scrap are unchanged in price. Forge fire, bundled skeleton, borings and turnings and machine shop turnings are among the active grades in the present market.

Buying prices per gross ton New York follow:

Heavy melting steel (yard)	$11.75 to $12.25
Heavy melting steel (railroad or equivalent)	13.50 to 14.25
Rails for rolling	14.50 to 15.00
Relaying rails, nominal	23.00 to 24.00
Steel car axles	22.00 to 22.50
Iron car axles	24.50 to 25.00
No. 1 railroad wrought	15.50 to 16.00
Forge fire	11.25 to 11.75
No. 1 yard wrought, long	14.50 to 15.00
Cast borings (steel mill)	10.75 to 11.25
Cast borings (chemical)	14.00 to 14.50
Machine shop turnings	10.50 to 11.00
Mixed borings and turnings	10.50 to 11.00
Iron and steel pipe (1 in. diam., not under 2 ft. long)	12.75 to 13.25
Stove plate (steel mill)	11.00 to 11.25
Stove plate (foundry)	12.00 to 12.25
Locomotive grate bars	12.50 to 13.00
Malleable cast (railroad)	16.50 to 17.50
Cast iron car wheels	14.50 to 15.00
No. 1 heavy breakable cast	14.00 to 14.50

Prices which dealers in New York and Brooklyn are quoting to local foundries per gross ton follow:

No. 1 machinery cast	$18.50 to $19.00
No. 1 heavy cast (columns, building material, etc.), cupola size	17.00 to 17.50
No. 2 cast (radiators, cast boilers, etc.)	16.00 to 16.50

Cleveland

Reduce Coke Rates to East—Heavy First Quarter Bar Bookings

CLEVELAND, Nov. 24.—While the volume of business in finished steel continues good, some of the mills report that demand is not so active as early in the month, as a large share of their customers are now covered either for early requirements or for first quafter. Mills have heavy order books for steel bars and some are filled up well into the first quarter. There is increased activity on the part of the automotive industry. Some of the car manufacturers have bought liberal quantities of sheets and strip steel for the first quarter, but others are showing a somewhat more conservative policy and have not yet come into the market for that delivery. There was little change in the price situation the past week. The steel bar market is firm at 2c., Pittsburgh, for early shipment, with some small lots going at 2.10c., although mills are finding it rather difficult to get the higher price. Plates have become somewhat more active, as many of the smaller consumers are placing first quarter contracts at 1.90c., base Pittsburgh. For early delivery, 1.80c. has not disappeared, although 1.90c. has become more common. Structural material is firmer, ranging from 1.90c. to 2c. There is a lull in building activities, but considerable work is in prospect, some of which is expected to come out before the end of the year.

Pig Iron.—The market quieted down considerably the past week although one producer sold 18,000 tons, including several good-sized lots, one of which was 4000 tons. Prices are firm without any changes with the exception that one Buffalo producer has advanced foundry iron $1 a ton to $22 for this year's delivery. The Otis Steel Co., Cleveland, blew out one of its furnaces for relining Nov. 21, and it will probably be some time before Cleveland furnaces will offer any iron for sale. Purchases by Cleveland consumers during the week were light and these were made on the Valley basis of $20.50 to $21 for foundry and malleable iron. Some of the business in western Ohio and eastern Indiana is still going to Valley and southern Ohio furnaces, as their delivered prices are lower than those from some of the Lake plants which are holding to $23, furnace. The demand from the automotive industry for shipments on contracts has as yet shown no falling off and one Michigan foundry making automobile castings purchased 3000 tons during the week for this year's delivery. Another sale called for 4000 tons and a Barberton, Ohio, consumer bought 1000 tons. Some second quarter inquiry has come out but none of the producers will quote for that delivery. The Andrews Steel Co., which inquired for 25,000 tons of basic iron, has purchased 2000 to 3000 tons of off-grade basic from a southern Ohio furnace. Ohio silvery iron has advanced $1 a ton for this year to $29.50 for 8 per cent, as compared with $30.50 which was recently named for the first quarter. A western Ohio consumer is inquiring for 1000 tons of low phosphorus iron for the first half. While some business has been taken at $28.50, this grade can probably still be bought on a $28 Valley base.

Quotations below, except on basic and low phosphorus iron, are delivered Cleveland, and for local iron include a 50c. switching charge. Ohio silvery and Southern iron prices are based on a $3.02 freight rate from Jackson and $6.01 from Birmingham:

Basic, Valley furnace	$20.00
N'th'n No. 2 fdy., sil. 1.75 to 2.25	$22.26 to 22.76
Southern fdy., sil. 1.75 to 2.25	26.01 to 27.01
Malleable	22.26 to 22.76
Ohio silvery, 8 per cent	32.52
Standard low phos., Valley furnace	28.00 to 28.50

Iron Ore.—During October there were 4,609,389 tons of Lake Superior ore consumed, or a gain of 598,563 tons over September. The amount consumed in October, 1924, was 3,497,792 tons. Ore on hand at furnaces Nov. 1 amounted to 33,541,569 tons. The amount at furnace and on Lake Erie docks on the same date was 41,197,798 tons as compared with 41,536,089 tons on the same date a year ago. On Oct. 31 there were 178 furnaces in blast using Lake ore, a gain of eight for the month. Furnaces in the Central district during October consumed 2,468,449 tons, a gain of 357,784 tons for the month. Lake front furnaces consumed 1,939,755 tons, a gain of 237,724 tons, and all-rail furnaces consumed 116,842 tons, or a gain of 5842 tons. Eastern furnaces consumed 84,343 tons, a decrease of 2487 tons for the month. Most of the ore shippers are nearly through for the season, although a number of cargoes will be brought down this week.

Sheets.—With an advance for the first quarter by the American Sheet & Tin Plate Co. to the prices previously placed in effect by leading independent mills, the market appears to be firmly established at 2.35c. for black, 2.50c. for blue annealed, 4.60c. for galvanized and 4.50c. for automobile body sheets for that delivery, and considerable business has been booked at these prices. However, for current orders black and galvanized sheets can still be bought at $2 below the above prices. Orders for this year's shipment are light, as most consumers are covered through December and many of the mills have no sheets to offer for this year. With more exacting demands from the automotive industry for high quality in automobile body sheets, mills in the last price advance changed their policy in regard to the taking of seconds. Hereafter consumers of 20-gage and heavier body sheets will be required to take 15 per cent in seconds in widths up to 36 in., 20 per cent in widths 36 to 42 in., and 25 per cent in widths above 42 in. Buyers must take 25 per cent in seconds in 21-gage and lighter sheets in all widths. Heretofore it has been customary for a customer to take 10 to 15 per cent in seconds. The price of the seconds is unchanged at 10 per cent below primes.

Semi-Finished Steel.—Many consumers have covered with first quarter contracts at $36, Youngstown, for sheet bars, and $35 for billets, and Valley mills have little steel to offer for that delivery. A Cleveland mill has taken some additional orders for sheet bars and small billets for this year's delivery at $37.50, Cleveland or Youngstown, and has covered many of its customers with first quarter contracts based on trade paper quotations. Some first quarter sheet bar business has also been placed in the form of reservations, the price to be fixed late in December.

Strip Steel.—Rather heavy sales in hot-rolled strip steel for the first quarter have been made at the regular quotations of 2.30c., Pittsburgh, for wide strip and 2.50c. for narrow material. A fair amount of business

has also been booked in cold-rolled strip for the same delivery at the current price of 3.90c., Cleveland.

Reinforcing Bars.—Demand is light, owing to the seasonal falling off in building. New work includes 500 tons for a warehouse for the Sterling & Welch Co., Cleveland, and 100 tons for a building for the Park Hall Improvement Co.

Bolts, Nuts and Rivets.—Demand for bolts and nuts is holding up well and the industry is reported to be operating at 70 per cent of capacity, or considerably better than a few weeks ago. There is some talk of a 5 per cent advance for the first quarter, although buyers are resisting higher prices. Books for that delivery may be opened within a week. Rivets are in fair demand. The market is holding to $2.60, Cleveland, for large rivets, but this price has not been tested except on small lot sales. A Cleveland maker who announced a discount of 70 and 10 per cent on small rivets for the first quarter is taking some business at that price.

Fluorspar.—Some effort is being made to advance the price on gravel fluorspar. One producer is now asking $17.50, mine, for this grade, but the market remains at $16, at which some business has been taken in first quarter contracts.

Alloy Steel Bars.—Makers are holding to the price advances reported last week. The new prices are being quoted for delivery through the first quarter, but little business has been booked as yet for that delivery.

Warehouse Business.—Following the issuance of the new card of extras on cold finished steel bars, Cleveland warehouses have advanced prices $2 a ton on this class of material. Warehouse business this month shows a slight gain over October.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 3.95c.; No. 28 galvanized sheets, 5.10c.; No. 10 blue annealed sheets, 3.15c.; cold rolled rounds and hexagons, 3.90c.; flats and squares, 4.40c.; hoops and bands, 3.85c.; No. 9 annealed wire, $3 per 100 lb.; No. 9 galvanized wire, $3.45 per 100 lb.; common wire nails, $3 base per 100 lb.

Coke.—New tariffs on coke for shipment to the East which, it is said, will open up the entire Eastern market for Lake and Valley district by-product coke, have been announced by several railroads and will become effective Dec. 19. The rates are about the same as the Connellsville rates to the same points. The present rates on Ohio by-product coke to the East are prohibitive except for shipment to very few points. The blowing out of a Cleveland furnace has thrown considerable additional coke on the market. Sales have been light the past few days, but inquiries are beginning to become more plentiful. Some demand is now coming from Canada. Makers are holding to $8, ovens, for by-product coke for domestic use. Prices on Connellsville foundry coke are lower, the range being from $6 to $7.50, ovens. The high by-product prices have permitted some West Virginia foundry coke to enter this territory. This is selling at $6, ovens, and carries a $3.65 freight rate to Cleveland.

Old Material.—The market is not active and most prices are holding to recent levels without showing an upward or downward tendency. Mills and blast furnaces generally are covered for their requirements for some time. There is some demand from dealers for blast funace scrap and this is bringing $14.25 to $14.75, delivered to Cleveland furnaces. Present prices are bringing out all the scrap that is needed to meet current demands.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$17.50 to $17.75
Rails for rolling	16.75 to 17.00
Rails under 3 ft	19.50 to 20.00
Low phosphorus melting	19.00 to 19.25
Cast iron borings	14.25 to 14.50
Machine shop turnings	13.50 to 14.00
Mixed borings and short turnings	14.25 to 14.50
Compressed sheet steel	15.50 to 16.00
Railroad wrought	14.50 to 15.00
Railroad malleable	20.50 to 21.00
Light bundled sheet stampings	12.50 to 12.75
Steel axle turnings	15.25 to 15.50
No. 1 cast	18.00 to 18.50
No. 1 busheling	14.25 to 14.50
Drop forge flashings	14.75 to 15.00
Railroad grate bars	13.75 to 14.00
Stove plate	13.75 to 14.00
Pipes and flues	11.50 to 12.00

Philadelphia

Steel Demand Continues with Buying for First Quarter at Firm Prices

PHILADELPHIA, Nov. 24.—The steel price structure is getting on firmer ground with the continuation of a substantial volume of new business and specifications on contracts. Neither buyers nor producers believe that a runaway market is likely, but there is confidence among buyers that current quotations are likely to be minimum for first quarter and there is no hesitation on their part in covering for that period, particularly on sheets where the option form of contract prevails with price protection whichever way the market goes. Some of the mills are following a conservative policy with regard to first quarter business, preferring to let the initiative come from the buyer. While there have been no further price advances, concessions are less frequent and some mills, with substantial backlogs, are not willing to grant any concessions. Plates, which are being sold by Eastern mills at $6 to $8 a ton below the prices on shapes and bars, may be advanced this week, the probability being that quotations now being given on first quarter contracts, namely 1.75c. and 1.80c., Pittsburgh, will also be named for delivery over the remainder of the year.

Pig iron is quiet, but prices on Eastern iron are firm at $23, base, furnace. Foreign iron is being sold at slightly under this price. The scrap market is more active, with substantial purchases of heavy melting steel having been made at $17.50 and $18, delivered to Eastern mills.

Pig Iron.—The falling off in pig iron buying which followed the recent decline in coke prices has become more marked in the past week. The volume of buying has been small and not many inquiries are being received. As to the effect of any settlement of the anthracite coal strike, the view of producers is that no matter what happens iron will not be any lower during the first quarter of the year. There are fewer predictions that it will go higher unless there should be another buying movement in coke for domestic heating purposes, the last buying movement having been checked by the congestion on railroads. Blast furnace coke is being freely offered at $5, Connellsville ovens, and one offer as low as $4.50 is reported. Foundry iron is being offered by eastern Pennsylvania furnaces at $23 for No. 2 plain and at $23.50 for No. 2X for delivery either this year or in first quarter, with very little available for November and December. Much of the foreign iron which will arrive this year has been sold and prices have stiffened but are still under domestic quotations.

The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$23.26 to $24.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.76 to 24.63
East. Pa. No. 1X	24.26 to 25.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic delivery eastern Pa.	22.50 to 23.50
Gray forge	22.00 to 23.00
Malleable	23.00 to 23.50
Standard low phos. (f.o.b. furnace)	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	24.50

Ferroalloys.—With moderate buying the ferromanganese market remains steady, quotations being $115 on either foreign or domestic alloy.

Billets.—Some mills report a scarcity of semi-finished steel. Ingots have been shipped from the Sparrows Point plant of the Bethlehem Steel Co. to its Bethlehem works. For first quarter quotations probably will be $1 higher than the present market, making the new prices $36 for rerolling billets and $41 for forging billets, Pittsburgh.

Plates.—Eastern plate mills are getting a little more tonnage and operations at some of the mills are now not far from 75 per cent. While sales are being freely made at 1.60c., Pittsburgh, for delivery over the

remainder of the year, it was intimated today that an advance of $3 or $4 a ton may be announced possibly this week by one or two mills. Plates are now being sold at $6 to $8 a ton below the prices of shapes and bars. For first quarter 1.75c. and 1.80c., Pittsburgh, are being quoted.

Shapes.—In common with most of the other finished products, excepting plates, shapes are firmer in price. Eastern mills able to make early shipments are getting as high as 2.10c., Pittsburgh, for small lots, though the market on large lots is not above 1.90c., and the latter price is occasionally being shaded on very desirable tonnage. Fabricators in the Philadelphia district are working at full capacity in most instances.

Sheets.—Independent sheet mills have made a considerable number of first quarter contracts at the new prices, 2.50c. for blue annealed, 3.35c. for black and 4.60c. for galvanized sheets. A Baltimore fabricator is in the market for 600 tons of blue annealed.

Warehouse Business.—Except that occasional concessions are being given on steel bars, the nominal quotation on which is 3.20c., prices on steel products out of stock are generally quite firm. We quote for local delivery as follows:

Soft steel bars and small shapes, 3.20c.; iron bars (except bands), $3.20c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel, planished, 4.30c.; tank steel plates, ¼ in. and heavier, 2.80c. to 3c.; tank steel plates, ⅛ in., 3c.; blue annealed steel sheets, No. 10 gage, 3.50c.; black sheets, No. 28 gage, 4.55c.; galvanized sheets, No. 28 gage, 5.65c.; square twisted and deformed steel bars, 3c.; structural shapes, 2.75c. to 2.90c.; diamond pattern plates, ¼ in., 5.30c.; ⅛ in., 5.50c.; spring steel, 5c.; rounds and hexagons, cold-rolled steel, 4.00c.; squares and flats, cold-rolled steel, 4.50c.; steel hoops, 4.25c., base; steel bands, No. 12 gage to ⅛ in., inclusive, 3.90c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 6.50c.

Bars.—November sales of steel bars by the largest Eastern producer are running well up to the October bookings, last month having been the largest of the year so far. The price is firm at 2c., Pittsburgh, for November-December shipment and first quarter contracts are also being entered at that figure, though some mills have made an effort to obtain 2.10c. The larger buyers have not paid the latter price. The Whiting-Turner Construction Co., Baltimore, which will build a sewer for the Richmond, Potomac & Fredericksburg Railroad at Fredericksburg, Md., will probably buy 1400 tons of concrete reinforcing bars this week. German bars have been offered at 1.95c., delivered, duty paid. Bar iron demand is fair and the price is just $2 a ton under the steel bar price, or 2.22c., Philadelphia.

Imports.—Larger importations of English iron came last week, the total from that country being 3425 tons. Pig iron receipts from India were 1880 tons and from Germany 278 tons. Iron ore from Sweden amounted to 7050 tons and chrome ore from Portuguese Africa totaled 2200 tons.

Old Material.—An Eastern steel company has bought about 25,000 tons of heavy melting steel for three plants at $17.50, delivered. Two other mills have bought an aggregate of about 10,000 tons at $18, delivered. The market is firm, but there have been few price changes. The dullness in the Pittsburgh market seems to have some effect here, but brokers are expecting a further advance in the East as soon as Pittsburgh mills come into the market again.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	$17.50 to $18.00
Scrap rails	17.00 to 17.50
Steel rails for rolling	18.50 to 19.00
No. 1 low phos. heavy 0.04 and under	22.00 to 22.50
Couplers and knuckles	21.50 to 22.00
Rolled steel wheels	21.50 to 22.00
Cast iron car wheels	18.50 to 19.00
No. 1 railroad wrought	18.50 to 19.00
No. 1 yard wrought	17.00 to 17.50
No. 1 forge fire	15.50 to 16.00
Bundled sheets (for steel works)	15.00 to 15.50
Mixed borings and turnings (for blast furnace use)	13.50 to 14.50
Machine shop turnings (for steel works use)	15.00 to 15.50
Machine shop turnings (for rolling mill use)	15.00 to 15.50
Heavy axle turnings (or equivalent)	15.50 to 16.00
Cast borings (for steel works and rolling mill)	14.50 to 15.00
Cast borings (for chemical plant)	17.00 to 17.50
No. 1 cast	18.00 to 19.00
Heavy breakable cast (for steel plant)	17.50 to 18.00
Railroad grate bars	15.00 to 15.50
Stove plate (for steel plant use)	15.00 to 15.50
Wrought iron and soft steel pipes and tubes (new specifications)	17.00 to 17.50
Shafting	23.00 to 24.00
Steel axles	24.00 to 25.00

Puts High-Temperature Steel Furnace into Operation

BELOIT, WIS., Nov. 23.—The Bosshardt high-temperature open-hearth steel furnace installed in the Wanner Malleable Castings Co. here was put into operation today. A steel was obtained of notable fluidity at 3600 deg. Fahr. temperature making it easy to pour castings of specially thin sections. Several well-known automobile and other plants furnished new patterns calculated to give castings of reduced weight and at the same time of increased strength. The furnace, which is the first of its kind in the United States, was described in THE IRON AGE of March 26, 1925.

Changes in Bureau of Mines

WASHINGTON, Nov. 24.—The first step in the reorganization of the Bureau of Mines was taken today when Secretary of Commerce Hoover, acting on the recommendations of the advisory committee and Director Scott Turner, announced the establishment of an economic branch of the bureau and named C. F. White, now chief of the coal division, bureau of foreign and domestic commerce, to take charge of this work. The new branch of the Bureau of Mines will embrace the division of mineral statistics and there will be transferred, from the Bureau of Foreign and Domestic Commerce to the new branch, the major work of that bureau in petroleum, coal and other minerals.

Mr. White's business career in industry covers years of operation of coal dock properties on the Great Lakes, of bituminous mines in Ohio and Pennsylvania, and in executive positions as vice-president and general manager of large corporations in the production, purchase, shipping, handling and sale of coal. He came into Government service as manager of Lake and Canadian distribution in charge of coal supplies for northern communities under the United States Fuel Administration during the war, and later was assistant fuel distributor.

The contemplated changes in the Bureau of Mines will be effective Dec. 1, or in any event not later than Jan. 1. D. A. Lyon will continue to be assistant director in charge of technologic work of the bureau.

Tennessee Company Starts Sheet Mill

BIRMINGHAM, Nov. 24.—Three units of the new sheet mill of the Tennessee Coal, Iron & Railroad Co. at Fairfield, Ala., will start operations today, according to an announcement by George Gordon Crawford, president. Each hot mill will have a capacity of approximately 3000 tons per month. Some skilled labor for the plant has been brought into the district from other sections, but the major part of the necessary labor is being recruited and trained here. The starting of the mill opens a new cycle in steel production in the South. Several sheet-consuming industries are now planning to locate in the Birmingham district, and plants already situated here are placing business with the mill.

Buys Spring Coiling Machinery Department

Sleeper & Hartley, Inc., Worcester, Mass., has taken over from the American Can Co., New York and Chicago, its spring coiling machinery department and is now prepared to furnish to the trade the spring coiling machines, together with supply and repair parts, formerly made by the latter company.

has also been booked in cold-rolled strip for the same delivery at the current price of 3.90c., Cleveland.

Reinforcing Bars.—Demand is light, owing to the seasonal falling off in building. New work includes 500 tons for a warehouse for the Sterling & Welch Co., Cleveland, and 100 tons for a building for the Park Hall Improvement Co.

Bolts, Nuts and Rivets.—Demand for bolts and nuts is holding up well and the industry is reported to be operating at 70 per cent of capacity, or considerably better than a few weeks ago. There is some talk of a 5 per cent advance for the first quarter, although buyers are resisting higher prices. Books for that delivery may be opened within a week. Rivets are in fair demand. The market is holding to $2.60, Cleveland, for large rivets, but this price has not been tested except on small lot sales. A Cleveland maker who announced a discount of 70 and 10 per cent on small rivets for the first quarter is taking some business at that price.

Fluorspar.—Some effort is being made to advance the price on gravel fluorspar. One producer is now asking $17.50, mine, for this grade, but the market remains at $16, at which some business has been taken in first quarter contracts.

Alloy Steel Bars.—Makers are holding to the price advances reported last week. The new prices are being quoted for delivery through the first quarter, but little business has been booked as yet for that delivery.

Warehouse Business.—Following the issuance of the new card of extras on cold finished steel bars, Cleveland warehouses have advanced prices $2 a ton on this class of material. Warehouse business this month shows a slight gain over October.

Jobbers quote steel bars, 3.10c.; plates and structural shapes, 3.20c.; No. 28 black sheets, 3.95c.; No. 28 galvanized sheets, 5.10c.; No. 10 blue annealed sheets, 3.15c.; cold rolled rounds and hexagons, 3.90c.; flats and squares, 4.40c.; hoops and bands, 3.85c.; No. 9 annealed wire, $3 per 100 lb.; No. 9 galvanized wire, $3.45 per 100 lb.; common wire nails, $3 base per 100 lb.

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Old Material.—The market is not active and most prices are holding to recent levels without showing an upward or downward tendency. Mills and blast furnaces generally are covered for their requirements for some time. There is some demand from dealers for blast funace scrap and this is bringing $14.25 to $14.75, delivered to Cleveland furnaces. Present prices are bringing out all the scrap that is needed to meet current demands.

We quote dealers' prices f.o.b. Cleveland per gross ton:

Heavy melting steel	$17.50 to $17.75
Rails for rolling	16.75 to 17.00
Rails under 3 ft.	19.50 to 20.00
Low phosphorus melting	19.00 to 19.25
Cast iron borings	14.25 to 14.50
Machine shop turnings	13.50 to 14.00
Mixed borings and short turnings	14.25 to 14.50
Compressed sheet steel	15.50 to 16.00
Railroad wrought	14.50 to 15.00
Railroad malleable	20.50 to 21.00
Light bundled sheet stampings	12.50 to 12.75
Steel axle turnings	15.25 to 15.50
No. 1 cast	18.00 to 18.50
No. 1 busheling	14.25 to 14.50
Drop forge flashings	14.75 to 15.00
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The following quotations are, with the exception of those on low phosphorus iron, for delivery at Philadelphia and include freight rates varying from 76c. to $1.63 per gross ton:

East. Pa. No. 2 plain, 1.75 to 2.25 sil.	$23.26 to $24.13
East. Pa. No. 2X, 2.25 to 2.75 sil.	23.76 to 24.63
East. Pa. No. 1X	24.26 to 25.13
Virginia No. 2 plain, 1.75 to 2.25 sil.	27.67 to 28.67
Virginia No. 2X, 2.25 to 2.75 sil.	28.17 to 29.17
Basic delivery eastern Pa.	22.50 to 23.50
Gray forge	22.00 to 23.00
Malleable	23.00 to 23.50
Standard low phos. (f.o.b. furnace)	24.00 to 25.00
Copper bearing low phos. (f.o.b. furnace)	24.50

Ferroalloys.—With moderate buying the ferromanganese market remains steady, quotations being $115 on either foreign or domestic alloy.

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remainder of the year, it was intimated today that an advance of $3 or $4 a ton may be announced possibly this week by one or two mills. Plates are now being sold at $6 to $8 a ton below the prices of shapes and bars. For first quarter 1.75c. and 1.80c., Pittsburgh, are being quoted.

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Sheets.—Independent sheet mills have made a considerable number of first quarter contracts at the new prices, 2.50c. for blue annealed, 3.35c. for black and 4.60c. for galvanized sheets. A Baltimore fabricator is in the market for 600 tons of blue annealed.

Warehouse Business.—Except that occasional concessions are being given on steel bars, the nominal quotation on which is 3.20c., prices on steel products out of stock are generally quite firm. We quote for local delivery as follows:

Soft steel bars and small shapes, 3.20c.; iron bars (except bands), $3.20c.; round edge iron, 3.50c.; round edge steel, iron finished, 1½ x ½ in., 3.50c.; round edge steel, planished, 4.30c.; tank steel plates, ¼ in. and heavier, 2.80c. to 3c.; tank steel plates, ⅛ in., 3c.; blue annealed steel sheets, No. 10 gage, 3.50c.; black sheets, No. 28 gage, 4.55c.; galvanized sheets, No. 28 gage, 5.65c.; square twisted and deformed steel bars, 3c.; structural shapes, 2.75c. to 2.90c.; diamond pattern plates, ¼ in., 5.30c.; ⅛ in., 5.50c.; spring steel, 5c.; rounds and hexagons, cold-rolled steel, 4.00c.; squares and flats, cold-rolled steel, 4.50c.; steel hoops, 4.25c., base; steel bands, No. 12 gage to ⅛ in., inclusive, 3.90c.; rails, 3.20c.; tool steel, 8.50c.; Norway iron, 6.50c.

Bars.—November sales of steel bars by the largest Eastern producer are running well up to the October bookings, last month having been the largest of the year so far. The price is firm at 2c., Pittsburgh, for November-December shipment and first quarter contracts are also being entered at that figure, though some mills have made an effort to obtain 2.10c. The larger buyers have not paid the latter price. The Whiting-Turner Construction Co., Baltimore, which will build a sewer for the Richmond, Potomac & Fredericksburg Railroad at Fredericksburg, Md., will probably buy 1400 tons of concrete reinforcing bars this week. German bars have been offered at 1.95c., delivered, duty paid. Bar iron demand is fair and the price is just $2 a ton under the steel bar price, or 2.22c., Philadelphia.

Imports.—Larger importations of English iron came last week, the total from that country being 3425 tons. Pig iron receipts from India were 1880 tons and from Germany 278 tons. Iron ore from Sweden amounted to 7050 tons and chrome ore from Portuguese Africa totaled 2200 tons.

Old Material.—An Eastern steel company has bought about 25,000 tons of heavy melting steel for three plants at $17.50, delivered. Two other mills have bought an aggregate of about 10,000 tons at $18, delivered. The market is firm, but there have been few price changes. The dullness in the Pittsburgh market seems to have some effect here, but brokers are expecting a further advance in the East as soon as Pittsburgh mills come into the market again.

We quote for delivery, consuming points in this district, as follows:

No. 1 heavy melting steel	$17.50 to $18.00
Scrap rails	17.00 to 17.50
Steel rails for rolling	18.50 to 19.00
No. 1 low phos. heavy 0.04 and under	22.00 to 22.50
Couplers and knuckles	21.50 to 22.00
Rolled steel wheels	21.50 to 22.00
Cast iron car wheels	18.50 to 19.00
No. 1 railroad wrought	18.50 to 19.00
No. 1 yard wrought	17.00 to 17.50
No. 1 forge fire	15.50 to 16.00
Bundled sheets (for steel works)	15.00 to 15.50
Mixed borings and turnings (for blast furnace use)	13.50 to 14.50
Machine shop turnings (for steel works use)	15.00 to 15.50
Machine shop turnings (for rolling mill use)	15.00 to 15.50
Heavy axle turnings (or equivalent)	15.50 to 16.00
Cast borings (for steel works and rolling mill)	14.50 to 15.00
Cast borings (for chemical plant)	17.00 to 17.50
No. 1 cast	18.00 to 19.00
Heavy breakable cast (for steel plant)	17.50 to 18.00
Railroad grate bars	15.00 to 15.50
Stove plate (for steel plant use)	15.00 to 15.50
Wrought iron and soft steel pipes and tubes (new specifications)	17.00 to 17.50
Shafting	23.00 to 24.00
Steel axles	24.00 to 25.00

Puts High-Temperature Steel Furnace into Operation

BELOIT, WIS., Nov. 23.—The Bosshardt high-temperature open-hearth steel furnace installed in the Wanner Malleable Castings Co. here was put into operation today. A steel was obtained of notable fluidity at 3600 deg. Fahr. temperature making it easy to pour castings of specially thin sections. Several well-known automobile and other plants furnished new patterns calculated to give castings of reduced weight and at the same time of increased strength. The furnace, which is the first of its kind in the United States, was described in THE IRON AGE of March 26, 1925.

Changes in Bureau of Mines

WASHINGTON, Nov. 24.—The first step in the reorganization of the Bureau of Mines was taken today when Secretary of Commerce Hoover, acting on the recommendations of the advisory committee and Director Scott Turner, announced the establishment of an economic branch of the bureau and named C. F. White, now chief of the coal division, bureau of foreign and domestic commerce, to take charge of this work. The new branch of the Bureau of Mines will embrace the division of mineral statistics and there will be transferred, from the Bureau of Foreign and Domestic Commerce to the new branch, the major work of that bureau in petroleum, coal and other minerals.

Mr. White's business career in industry covers years of operation of coal dock properties on the Great Lakes, of bituminous mines in Ohio and Pennsylvania, and in executive positions as vice-president and general manager of large corporations in the production, purchase, shipping, handling and sale of coal. He came into Government service as manager of Lake and Canadian distribution in charge of coal supplies for northern communities under the United States Fuel Administration during the war, and later was assistant fuel distributor.

The contemplated changes in the Bureau of Mines will be effective Dec. 1, or in any event not later than Jan. 1. D. A. Lyon will continue to be assistant director in charge of technologic work of the bureau.

Tennessee Company Starts Sheet Mill

BIRMINGHAM, Nov. 24.—Three units of the new sheet mill of the Tennessee Coal, Iron & Railroad Co. at Fairfield, Ala., will start operations today, according to an announcement by George Gordon Crawford, president. Each hot mill will have a capacity of approximately 3000 tons per month. Some skilled labor for the plant has been brought into the district from other sections, but the major part of the necessary labor is being recruited and trained here. The starting of the mill opens a new cycle in steel production in the South. Several sheet-consuming industries are now planning to locate in the Birmingham district, and plants already situated here are placing business with the mill.

Buys Spring Coiling Machinery Department

Sleeper & Hartley, Inc., Worcester, Mass., has taken over from the American Can Co., New York and Chicago, its spring coiling machinery department and is now prepared to furnish to the trade the spring coiling machines, together with supply and repair parts, formerly made by the latter company.

FABRICATED STEEL

Awards Total 34,000 Tons with 45,000 Tons Pending—Activity in New York

Awards of structural steel continue fairly heavy, with work in New York and environs making a considerable part of the week's total of 34,000 tons. Of 45,000 tons of new work now up for bids the largest part is in Chicago and New York. The Standard Oil Co. is in the market for 6000 tons of steel for tanks to be erected at Casper, Wyo. Awards follow:

Seamen's Bank Building, New York, 2200 tons, to Taylor-Fichter Steel Construction Co.

Elks' Club, Brooklyn, 3000 tons, to Post & McCord.

Hotel, 79 Willow Street, Brooklyn, 2400 tons, to Harris Structural Steel Co.

Public School No. 63, Borough of Queens, New York, 900 tons, to Lehigh Structural Steel Co.

Cranleigh Hospital, East Ninetieth Street, New York, 350 tons, to Lehigh Structural Steel Co.

Factory building, Verona, Pa., 100 tons, to Hedden Iron Construction Co.

Loft building, Ninth Avenue and Thirty-fifth Street, New York, 3400 tons, to Harris Structural Steel Co.

Office building, 15 West Forty-seventh Street, New York, 1400 tons, to Hedden Iron Construction Co.

Apartment building, 66 East Seventy-ninth Street, New York, 500 tons, to Taylor-Fichter Steel Construction Co.

New York Telephone Co., Ocean Avenue exchange, Brooklyn, 900 tons, to Hedden Iron Construction Co.

Hotel, Madison Avenue and Fifty-second Street, New York, 1375 tons, to Taylor-Fichter Steel Construction Co.

Florida East Coast Railroad, bridge, 1400 tons, to Virginia Bridge & Iron Co.

Overman Tire Co., Belleville, N. J., factory building, 325 tons, to an unnamed fabricator.

Bakery, Elmira, N. Y., 175 tons, to American Bridge Co.

Reading Railroad, bridge, 625 tons, to Bethlehem Steel Co.

Barnett National Bank, Jacksonville, Fla., 1200 tons, to Lehigh Structural Steel Co.

Roebling Building, 117 Liberty Street, New York, 800 tons, to Hay Foundry & Iron Works.

Mill building, Watertown, Mass., 100 tons to McClintic-Marshall Co.

Island Creek Coal Co., eight coal barges, 1500 tons, to Riter-Conley Co., Pittsburgh.

Gas holder, Buffalo, 5000 tons, to Stacey Brothers Gas Construction Co., Cincinnati.

St. Louis County Gas Co., Shrewsbury, Mo., 3,000,000 cu. ft. gas holder, 1700 tons, to Stacey Mfg. Co., Cincinnati.

Federated Utilities Co., Washington, Ind., additional section on gas holder, 100 tons, to Stacey Mfg. Co.

Standard Oil Co., Indianapolis, plant building, 300 tons, to Insley Mfg. Co., Indianapolis.

Pennsylvania Railroad, express terminal at Long Island City, N. Y., 2200 tons, to Shoemaker Bridge Co.

Louisville & Nashville, 800 tons of plates and shapes to Tennessee Coal, Iron & Railroad Co.

Skinner Building, Seattle, Wash., 600 tons, to Hofias Steel & Equipment Co., Seattle.

Antioch, Cal., pipe line, 110 tons, to Western Pipe & Steel Co., San Francisco.

East Bay Water Co., Oakland, Cal., 130 tons, to Steel Tank & Pipe Co., Berkeley, Cal.

California Petroleum Co., San Francisco, 300 tons, to Steel Tank & Pipe Co., Berkeley, and 185 tons, to Western Pipe & Steel Co.

Western States Gas & Electric Co., Stockton, Cal., 100 tons, to Steel Tank & Pipe Co.

South Park Avenue bridge, Buffalo, 150 tons, to American Bridge Co.

Wallace Block, Des Moines, Iowa, 130 tons, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

Market Street bridge, Harrisburg, Pa., 150 tons, to Bethlehem Steel Co.

Structural Projects Pending

Inquiries for fabricated steel work include the following:

Insurance Center office building, John Street, New York, 3500 tons.

L. S. Plaut & Co., Newark, N. J., addition to department store, 4000 tons.

Hotel, 26-40 West Fifty-fourth Street, New York, 2500 tons.

Loft building, Thirty-sixth Street, New York, 3000 tons.

Apartment building, Central Park West and Ninetieth Street, New York, 600 tons.

Atlantic Coast Line, bridge, 250 tons.

Old Dominion Distillery, Norfolk, Va., 500 tons.

Hotel, Jacksonville, Fla., 500 tons.

Hotel, Virginia Beach, near Norfolk, Va., 650 tons.

Machine shop, Elizabeth, N. J., 130 tons.

City Hall, New Bedford, Mass., 125 tons.

Theater, Everett, Mass., 200 tons.

Louisville & Nashville Railroad, Louisville, 32 bridges, 2000 tons; bids close Nov. 30.

Miami Athletic Club, Miami, Fla., tonnage unknown.

Standard Oil Co., Casper, Wyo., 6000 tons, for stills and tanks.

Atwater Avenue bridge, Milwaukee, 850 tons.

Garden Court Apartments, Chicago, 2500 tons.

Atchison, Topeka & Santa Fe Railroad, tanks, 900 tons.

United States Reclamation Service, Guernsey, Wyo., pent stock, 550 tons.

Bridge, South Park Board, Thirty-ninth Street, Chicago, 375 tons; Great Lakes Dredge & Dock Co., low bidder.

Calumet high school, Chicago, 1400 tons.

Fenger high school, Chicago, 1400 tons.

Armour & Co., Chicago, 250 tons.

Dock shed, Piety Street, New Orleans, 220 tons.

Michigan Bell Telephone Co., Detroit, office building, 3000 tons.

Michigan Bell Telephone Co., Battle Creek, Mich., office building, 220 tons.

Union Pacific Railroad, bridge extensions, 2500 tons.

Morton Building, Chicago, 4000 tons.

Power plant, Sanitary District, Niles Center, Ill., 1000 tons; Forschner Construction Co., Chicago, low bidder.

Apartment building, 900 North Michigan Avenue, Chicago, 2000 tons.

City of Seattle, Wash., pipe line, 1300 tons.

Bank of Hawaii, Honolulu, H. I., 550 tons.

W. B. Pollock, 6 Beaver Street, New York, four 16-car steel floats for the New York Central Lines; bids close Nov. 27.

National Enameling & Stamping Co., Granite City, Ill., warehouse, 150 tons.

RAILROAD EQUIPMENT

Falling Off in Both Inquiries and Orders for Cars and Locomotives

The past week has been quiet in the railroad equipment field, few orders having been placed. The only important inquiries are from the Reading for 1000 gondolas and from the New York Central for 500 automobile and 112 passenger cars. The Atlantic Coast Line has ordered 45 locomotives.

As of Nov. 1 the Class 1 railroads had fewer freight cars in need of repair than at any time since February, 1924, according to reports filed with the Car Service Division, American Railway Association. The number in need of repair was 165,481 or 7.1 per cent of the number on line. The same situation existed as regards locomotives, the number needing repair on Nov. 1 totaling 10,233 or 16.1 per cent of the number on line.

The principal equipment items of the week follow:

The Delaware, Lackawanna & Western is asking for bids on 50 ballast cars and 25 caboose cars. This road is expected to inquire shortly for 40 milk cars.

The Kansas City, Mexico & Orient is in the market for 50 box cars.

The Rajah Oil & Refining Co. has ordered 10 tank cars from the Standard Tank Car Co.

The Electro-Bleaching Gas Co. has ordered 15 tank cars from the General American Tank Car Corporation.

The Bierks Lumber & Coal Co. has ordered 25 steel-underframe logging cars from the American Car & Foundry Co.

The Atlantic Coast Line has bought 45 locomotives from the Baldwin Locomotive Works.

The Reading is inquiring for 1000 70-ton gondola cars.

The Chicago, Milwaukee & St. Paul will take prices on repairs to 770 gondolas.

The New York Central is making inquiry for 500 automobile cars.

An all-day trip by special train to the plant of the Bethlehem Steel Co., Bethlehem, Pa., on Friday, Dec. 4, is the feature excursion planned for the annual meeting of the American Society of Mechanical Engineers, which will be held at the Engineering Societies Building, New York, Nov. 30 to Dec. 5. Other excursions include a visit to the plant of the De La Vergne Machine Co., New York, on Tuesday afternoon, Dec. 1, and to the Harrison, N. J., works of the Worthington Pump & Machinery Corporation on Thursday afternoon, Dec. 3.

NON-FERROUS METALS

The Week's Prices

Cents per Pound for Early Delivery

	Copper, New York		Straits Tin (Spot)	Lead		Zinc	
Nov.	Lake	Electrolytic*	New York	New York	St. Louis	New York	St. Louis
18.....	14.75	14.37½	63.75	9.85	9.50	8.85	8.50
19.....	14.62½	14.25	63.60	9.85	9.50	8.95	8.60
20.....	14.62½	14.25	63.50	9.85	9.50	8.95	8.60
21.....	14.62½	14.25	...	9.85	9.50	9.00	8.65
23.....	14.50	14.12½	63.37½	9.85	9.50	9.05	8.70
24.....	14.50	14.12½	62.55	9.85	9.50	9.15	8.80

*Refinery quotation; delivered price ¼c. higher.

New York

NEW YORK, Nov. 24.

All the markets are inactive. Copper is again lower with little demand. Buying of tin has subsided and prices have declined. The lead market is unchanged from last week. Zinc prices have been advancing from the low levels last week.

Copper.—The market is quite weak. Demand from Europe has been very light recently which, with the increase in world production, has caused buyers here to remain cautious; they are fairly well covered anyhow. The natural result has been a sagging in prices until electrolytic copper is quoted and has sold as low as 14.37½c., delivered in the Connecticut Valley. Some producers are adhering to 14.50c., delivered, but the light demand can be met at the lower price. Business among copper consumers is reported good. The present weakness is believed by many to be temporary; as soon as foreign demand reappears, a stronger market is confidently expected.

Tin.—The week has been rather quiet, with total sales not over 700 tons, this estimate being a liberal one. Yesterday the market was almost stagnant but today the situation has been somewhat better with spot Straits quoted at 62.55c., New York. Sales of 200 tons to consumers were made at 62.50c. to 62.60c. with futures at 62.12½c. Prices in London today were £2 to £3 lower per ton than a week ago with spot standard quoted at £282 10s., future standard at £278 10s. and spot Straits at £289 10s. The Singapore price was £290 15s. Noticeable in these quotations is the premium of spot standard over future and of spot Straits over spot standard. Arrivals thus far this month have been 3870 tons with 5385 tons reported afloat. The convictions of one large importer are interesting. He is still bullish on the general situation with the relation of production and consumption the ruling factor. The market may have a temporary reaction unless consumers start to cover for their first quarter requirements. Other conditions assisting in a reaction are the disinclination of the market to advance, presumably larger visible supplies Dec. 1 and the effect of the New York stock market.

Lead.—Supplies of lead in Europe are more plentiful, the premium in spot has fallen and the market has sagged. European consumers are not drawing away Mexican lead which consequently is relieving the situation here. It therefore appears for the moment that peak prices have been reached. The market is still easier than a few weeks ago but prices have not materially changed since those of last week. The leading producer in the East still quotes 9.75c., New York, as its contract price with the quotation of the principal Western refiner unchanged at 9.50c., St. Louis. In that district higher prices have been obtained. He quotes the outside market at 9.85c., New York, or 9.50c., St. Louis.

Zinc.—The market for prime Western zinc has been advancing quite rapidly recently. After sinking from the highest prices of the year a week or two ago to under 9.50c., St. Louis, quotations have turned again. Today this grade of zinc is held at 8.80c. to 8.85c., St. Louis, or 9.15c. to 9.20c., New York, for December delivery. Spot metal sold yesterday as high as 9.75c., St. Louis, and today higher prices are demanded, thus delivery becoming again scarce. There are prospects of more foreign demand as well as increased domestic buying. Consuming demand is not large, the strength of the market being due partly to dealers' inquiries and the strong position of sellers.

Nickel.—Wholesale lots of ingot nickel are still quoted at 34c. with shot nickel at 35c. per lb. Electrolytic nickel is quoted at 38c. per lb.

Antimony.—The market is still very strong. Chinese metal for spot delivery is scarce and nominal at 20c., New York, duty paid, and obtainable only in small lots. December-January shipment from China is quoted at 20.50c., duty paid, New York, with February-March shipment at 18.50c.

Aluminum.—Virgin metal, 98 to 99 per cent pure, is quoted at 28c. per lb.

Old Metals.—Business is quiet. Dealers' selling prices are generally lower, as follows, in cents per lb.:

Copper, heavy and crucible	14.00
Copper, heavy and wire	13.00
Copper, light and bottoms	11.75
Heavy machine composition	10.00
Brass, heavy	9.00
Brass, light	7.75
No. 1 red brass or composition turnings	9.50
No. 1 yellow rod brass turnings	9.50
Lead, heavy	8.50
Lead, tea	7.00
Zinc	5.75
Cast aluminum	21.50
Sheet aluminum	21.50

Chicago

Nov. 24.—The prices of copper and tin have shaded off slightly in rather inactive markets. With producers well sold and spot metal going at a premium the price of zinc has advanced. Lead and antimony have also advanced in markets which have shown greater activity. Quotations on old metals are steady and unchanged. We quote in carload lots: Lake copper, 14.50c.; tin, 64.50c.; lead, 9.70c.; zinc, 8.75c.; in less than carload lots, antimony, 21.50c. On old metals we quote copper wire, crucible shapes and copper clips, 11.50c.; copper bottoms, 10c.; red brass, 9c.; yellow brass, 8c.; lead pipe, 8.50c.; zinc, 5.25c.; pewter, No. 1, 37c.; tin foil, 44c.; block tin, 52c.; all being dealers' buying prices for less than carload lots.

Old Material Weaker at Detroit

DETROIT, Nov. 24.—With mills taking in scrap on a restricted basis and dealers finding it difficult to make sales at the expected prices, the entire situation is appreciably weaker. Several lists of importance close this week and prices will be somewhat lower than anticipated.

The following prices are quoted on a gross ton basis f.o.b. producers' yards, excepting stove plate, No. 1 machinery cast and automobile cast, which are quoted on a net ton basis:

Heavy melting and shoveling steel	$15.00 to $15.50
Borings and short turnings	11.75 to 12.25
Long turnings	10.75 to 11.25
No. 1 machinery cast	17.00 to 18.00
Automobile cast	23.00 to 24.00
Hydraulic compressed	13.75 to 14.25
Stove plate	13.50 to 14.50
No. 1 busheling	13.25 to 13.75
Sheet clippings	9.25 to 9.75
Flashings	12.50 to 13.00

Pennsylvania Industrial Conditions Improve

HARRISBURG, PA., Nov. 21.—Improved conditions in the iron and steel centers of Pennsylvania are reflected in the semi-monthly report of trade conditions to R. H. Lansburgh, Secretary of Labor and Industry. The Pittsburgh statement tells of continued improvement. Reading notes an improvement, with the Reading Iron Co. working virtually at full time. Steel mills have found conditions better, particularly in the case of the Bethlehem Steel Co. Many foundries are working full. A shortage of brass and aluminum molders is reported. The Johnstown district reports a continued upward trend in production and shipments. Employment is increasing in the Harrisburg area.

PERSONAL

Charles L. Wood has been appointed general manager of sales of the Carnegie Steel Co. at Pittsburgh. He has been assistant general manager of sales in charge of the bar, hoop and band business of the Carnegie company since 1918, when he succeeded William G. Clyde, now president of the company, when the latter was appointed general manager of sales. Mr. Wood was born in Youngstown, Ohio, Sept. 11, 1873. He attended the public schools of that city and then entered the Ohio State University, with the class of 1896, taking up a course in mining engineering. He was with the Calumet Furnace Co., Chicago, as a chemist for a short time after leaving college, and when business troubles forced that company to suspend operations, he engaged in mining engineering in Colorado and other Western districts. In 1898, he became affiliated with the American Steel Hoop Co., and was made manager of the order department when the company moved to New York. Upon its consolidation with the Carnegie Steel Co., and with the formation of the United States Steel Corporation, he was transferred to the sales department of the Carnegie Steel Co. in Pittsburgh. A thorough knowledge of the bar and hoop business gained for him the appointment as assistant to Mr. Clyde when the latter became assistant general manager of sales in charge of the bar, hoop and band department. In his home community of Thornburg, Pa., he is president of the Borough Council. He is a director of the Duquesne Club; vice-president of the Chartiers Heights Country Club; and a member of the Oakmont Country Club, the Youngstown Club and the Fellows Club of Pittsburgh.

CHARLES L. WOOD

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Samuel R. Hoover succeeds Charles L. Wood, as assistant general manager of sales of the Carnegie Steel Co., in charge of the bar, hoop and band bureau, on the advancement of Mr. Wood to the general managership of sales of the Carnegie company. Mr. Hoover's connection with the steel industry covers a period of 27 years, as it was in 1898 that he entered the employ of the Mahoning Valley Steel Co., Youngstown, Ohio. He was with that company for about a year, first in the mill and later in the general offices as an inspector. He then went to the Lake Erie works, at Cleveland, of the Republic Iron & Steel Co. as a shipping clerk and late in 1900 entered the employ of the American Steel Hoop Co. This company shortly afterward was absorbed by the Carnegie Steel Co., and Mr. Hoover since has been identified with that company. He became an assistant to Mr. Wood in 1918. He was born in Youngstown, Ohio, Sept. 14, 1877, and taught school there for about three years before entering the steel business. He is a member of the Pittsburgh Athletic Association and the Pittsburgh Field Club.

SAMUEL R. HOOVER

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I. Lamont Hughes, vice-president of the Carnegie Steel Co. in charge of operations of the Western district, comprising Youngstown, New Castle, Farrell, Mingo and Bellaire, will be transferred Dec. 1 from Youngstown to the Carnegie company's general headquarters at Pittsburgh. Prior to his advancement to vice-president, he was general superintendent in charge of the Youngstown district. L. N. McDonald, who now holds this title, is the ranking officer of the company in the district.

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George L. Erwin, Jr., has been appointed sales manager Kearney & Trecker Corporation, Milwaukee. He is a graduate of Cornell University, was later student apprentice at the Putnam Machine Works, salesman for Manning, Maxwell & Moore in St. Louis, salesman for Kearney & Trecker Corporation in Chicago and for the past two years advertising manager at the home office. His new duties will include advertising with sales direction.

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W. P. Cox has been made assistant general sales manager McWane Cast Iron Pipe Co., Birmingham. Porter W. Alley has been placed in charge of the Philadelphia office and M. M. Grant, Jr., is now Southern sales manager, with office in Birmingham.

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George G. Griest, general manager Niles-Bement-Pond Co., Hamilton, Ohio, has resigned. From 1918 until a few months ago, when he was made general manager, he had charge of the Niles plant in Hamilton. His duties have been taken over by James K. Cullen, president, who will be located hereafter in Hamilton.

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P. M. Smith, formerly sales engineer Standard Engineering Co., Ellwood City, Pa., has joined the organization of the Treadwell Engineering Co., Easton, Pa., in the capacity of Pittsburgh district manager, with offices at room 601, Farmers Bank Building, Pittsburgh.

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Oliver S. Larkby, assistant secretary Edwards Mfg. Co., Cincinnati, manufacturer of sheet metal products, has been elected a director of the Business Men's Club of Cincinnati.

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Barton R. Shover, consulting engineer, Pittsburgh, will supervise the power engineering of the new blast furnace of the St. Louis Coke & Iron Co., Granite City, Ill.

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C. R. Burt, general manager Pratt & Whitney Co., was recently elected a member of the board of directors and made vice-president of the company.

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G. E. Gleadall, assistant to president, in charge of purchases and sales, of R. J. Crozier Co., iron and steel and mill supplies, Philadelphia, has resigned. He first went with the company as office-boy in 1916. For the past several years he devoted his time to sales problems. He will be associated in a sales capacity with the Hine Desk & Fixture Co., Denver, designer and builder of wood and steel equipment for offices, banks and public buildings.

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Dr. Albert Sauveur, who holds the Gordon McKay professorship in metallurgy and metallography at the Harvard Engineering School, will give a series of three evening lectures at the Carnegie Institute of Technology Nov. 30, Dec. 1 and 2. The subjects of Dr. Sauveur's lectures will be "Directional Properties and Dendritic Segregation in Steel," and "Hardening of Steel." Two lectures will be given covering the latter subject.

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J. D. Karasik has resigned from Karasik, Friedman & Co., Inc., iron and steel, 233 Broadway, New York.

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B. R. Bates, Dorr Co., 247 Park Avenue, New York, returned to New York on Nov. 16 from South Africa,

where he spent a few months on business for the company.

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R. L. Ehmann has been appointed district manager of the industrial department of the Superheater Co., 17 West Forty-Second Street, New York, with headquarters at 923 Union Trust Building, Pittsburgh, succeeding John R. LeVally, who has been assigned special duties with headquarters at the New York office.

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J. H. Whiting was elected chairman of the board of Whiting Corporation, Harvey, Ill. He will remain actively engaged in the business. Col. T. S. Hammond, for many years vice-president and secretary, succeeds Mr. Whiting as president and treasurer. R. A. Pascoe succeeds Col. Hammond as secretary. R. H. Bourne will continue to be vice-president and sales manager of Whiting Corporation, and becomes president of Grindle Fuel Equipment Co., a subsidiary of Whiting Corporation. N. S. Lawrence is president of the Swenson Evaporator Co., a Whiting subsidiary, and also vice-president and assistant sales manager of the Whiting Corporation.

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Russell R. Smith has been appointed assistant general superintendent of the Ashland, Ky., works of the American Rolling Mill Co. and will be in charge of the sheet and jobbing mill operations. William Hoover has become superintendent of the sheet and jobbing mill departments and Thomas J. Flaherty superintendent of electrical maintenance. Worley P. Albaugh has been appointed superintendent of the open hearth department. All of the men have been associated with the Ashland division of Armco for a considerable time.

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Clarence Honhorst, superintendent Cincinnati Planer Co., has resigned to become associated with the William Powell Co., Cincinnati, brass foundry, in a similar capacity. He has been succeeded by Oscar Willey, formerly foreman of the tool room.

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T. L. Keeling has been appointed sales representative of the Climax Engineering Co., maker of internal combustion engines and refrigerating units, Clinton, Iowa, with offices at 657 Leader Building, Cleveland. He has been connected with the company for five years.

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E. A. Cowles has been made president and general manager of the Cowles Tool Co., Cleveland, manufacturer of milling cutters and special tools, succeeding in the presidency the late H. S. Hunter, of Pittsburgh, who died recently.

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W. C. Furnas, formerly assistant superintendent of the electrical department, Allis Chalmers Mfg. Co., Milwaukee, has been appointed superintendent of the maintenance department, succeeding the late C. O. Barrie. Mr. Furnas was graduated from Purdue University in 1908, and after serving two years with the Fort Wayne & Wabash Valley Traction Co., entered the railway motor department, in 1910, of the Allis-Chalmers company. In 1915 he was transferred to the maintenance department as maintenance engineer for electrical and air brake work, in charge of getting out small tools, as well as designing of several machine tools for special work. In 1920 he was appointed assistant superintendent of the electrical department and it was under his direction that a number of special tools and labor saving devices in this department were designed. He recently returned from a trip to England, Scotland, and the Continent, where he spent four months studying European shop methods.

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J. W. McDowell has been elected president of the newly organized Avery Power Machinery Co., Peoria, Ill. George J. Jobst is vice-president and H. J. Boynton is vice-president and general manager.

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E. L. Essley, president of the E. L. Essley Machinery Co., 551 West Washington Boulevard, Chicago, left, Nov. 22, for Miami, Fla., where he and Mrs. Essley will spend the winter.

J. S. Ashley, who has been manager of the lake fleet of the M. A. Hanna Co., Cleveland, since 1908, has been elected president of the Lake Carriers' Association, to succeed the late William Livingstone. He has been vice-president of the Lake Carriers' Association since 1915. Mr. Ashley has been succeeded as vice-president of the association by L. C. Sabin, general superintendent of the United States canals at Sault Ste. Marie, Mich. It is expected that the headquarters of the association will be transferred from Detroit to Cleveland.

—

Claude Johnson, managing director Rolls-Royce Co. of England, last week paid a trip to America to attend a directors meeting of the Rolls-Royce of America, Inc. He arrived in New York Nov. 16 and sailed home on the same boat Nov. 21.

—

D. R. Simonds has resigned from Rogers, Brown & Crocker Brothers, Inc., Boston, to become associated with Hickman, Williams & Co. He formerly was with the Arcade Malleable Iron Co., Worcester, Mass., and later with Rogers, Brown & Co.

—

W. C. Rott, until recently planning engineer Jones & Laughlin Steel Corporation, Pittsburgh, has become associated with the S. R. Smythe Co., consulting and contracting engineer, Oliver building, Pittsburgh, in the capacity of chief engineer. He is a graduate of the Massachusetts Institute of Technology, was with Julian Kennedy, consulting engineer, Pittsburgh, for about 10 years and also was associated with Barton R. Shover, as a consulting engineer.

—

Henry J. Barnes was elected vice-president of the Alumino-Thermic Corporation, Roselle Park, N. J., at a recent meeting of the board of directors. He has been connected with this company for the past three years, and before that, was many years in the sales department of the Metal & Thermit Corporation, being district manager in charge of Canada.

—

W. H. Patterson, formerly vice-president Kaestner & Hecht Elevator Co., Chicago, and later vice-president John H. Dunham Advertising Agency of that city, has joined the industrial sales department, Westinghouse Electric & Mfg. Co., East Pittsburgh. He will be in charge of the building industries division of the department. Mr. Patterson was with the Westinghouse company for a number of years prior to accepting the vice-presidency of the Kaestner & Hecht Elevator Co. a little more than three years ago. He started as an apprentice student, after graduating from Purdue University in 1905. At the time he left the Westinghouse company he was assistant to J. M. Curtin, manager industrial department.

—

James R. Thompson, for the past four years assistant works manager of the Trafford, Pa., foundry, Westinghouse Electric & Mfg. Co., has been appointed works manager, succeeding the late August Slusser. Mr. Thompson entered the employ of the Westinghouse company in 1897 as a time clerk and served in a number of capacities until 1904, when he assumed charge of the offices of the Trafford works. A few years later he was made assistant superintendent and four years ago assistant works manager.

—

William A. Smith has been appointed general superintendent Superior Steel Corporation, Carnegie, Pa. Mr. Smith has been identified with this interest for more than 30 years, starting in a minor position and rising steadily to places of responsibility. For the past few years he has been acting general superintendent.

—

George C. Dent, general secretary of the Society of Industrial Engineers, was guest of honor at a luncheon meeting held by the New York chapter of the society, Nov. 20, at the Café Boulevard, New York.

—

H. Willoughby has been appointed manager of the Scioto Valley Supply Co., Columbus, Ohio, succeeding William W. Ross, who died Oct. 20.

OBITUARY

ANDREW GLASS, director, vice-president and general manager of the Wheeling Steel Corporation, Wheeling, W. Va., died suddenly of heart attack Nov. 21, at the age of 45 years. With the exception of a period from 1922 to May, 1924, when due to illness he relinquished his duties, he had been in active charge of all operations of Wheeling Steel Corporation plants from the organization of the corporation in 1920 by consolidation of the La-Belle Iron Works, Wheeling Steel & Iron Co. and the Whitaker-Glessner Co. Mr. Glass was born in Wheeling, received his education in Chicago schools, and held his first position at the age of 18 with the Chicago office of the Wheeling Corrugating Co. In 1909 he became resident manager of the Portsmouth Steel Co., which concern was known later as the Portsmouth works of the Whitaker-Glessner Co., and subsequently the Wheeling Steel Corporation. Under his direction these plants at Portsmouth, Ohio, were virtually rebuilt. As general manager of the Portsmouth works during the World War, he conducted noteworthy experiments for the Government and won recognition for his company and for himself for distinguished success in development and production of materials for the ordnance and supply departments, and was the personal representative of his company at Washington conferences. He was a nephew of Alexander Glass, chairman of the board of directors of the Wheeling Steel Corporation, and came of a family of pioneers in the steel industry of the Ohio Valley. True to his heritage he prepared himself early in life for an active career in the steel business and, scarcely beyond forty years of age, was one of the industry's prominent figures.

ANDREW GLASS

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F. LEROY PETERSON, formerly in charge of the Chicago office of the Hendey Machine Co., Torrington, Conn., died, Nov. 18, at his home at 803 North Oak Park Avenue, Oak Park, Ill. He was born Feb. 22, 1874, at Warners, N. Y., and later moved to Albion, Mich., where he received his education. As a young man he went to Beloit, Wis., and there gained his first experience in the engine department of Fairbanks, Morse & Co. It was in Beloit that he was married to Marion Alice Whetstone, who survives him. One year, spent in Wilmington, Del., in the experimental department of a machine tool manufacturer, was followed by six years in Philadelphia, Pa., with the Fairbanks company. In 1906 he came to Chicago as a salesman in the district office of Manning, Maxwell & Moore, Inc., and in 1916 he took charge of the Chicago office of the Hendey Machinery Co., which position he held until June, 1925, when he retired because of ill health. Mr. Peterson enjoyed a host of friends and was well respected by all who knew him. He was a member of the Machinery Club of Chicago.

—

GEORGE DENNY ROPER, president of the Roper Corporation, manufacturer of gas stoves, Rockford, Ill., died in that city, Nov. 17, after an illness of several years. He was born in Springfield, Ill., 70 years ago. He moved to Rockford in 1880 and became associated as a salesman with the Rockford Watch Co. Five years later he entered the employ of the Van Wie Gas Stove Co., which was destroyed by fire a short time later. Mr. Roper took that opportunity to form a new company, the Eclipse Gas Stove Co., and erected a factory in Rockford. In 1919 he effected a merger with two other gas stove manufacturers under the name of the Roper Corporation, of which he became president.

—

JOSIAH F. JOHNSON, manager since 1923 of the general engineering division, South Philadelphia works, Westinghouse Electric & Mfg. Co., died at the Chester Hospital, Chester, Pa., Nov. 12. Mr. Johnson, born July 15, 1879, at Ziongrove, Pa., was graduated from the Bloomsburg (Pa.) High School, the Bloomsburg Normal School and Pennsylvania State College. Following his graduation from college in 1905 he entered the employ of the Westinghouse company, East Pittsburgh, serving the first year in shop testing of steam turbines. For the next six years he served in various field capacities and then was appointed assistant engineer, steam turbine department, and later engineer of that department.

—

WILLIAM DIXON, superintendent of labor and transportation Edgar Thomson Works, Carnegie Steel Co., Braddock, Pa., died at his home in North Braddock, Nov. 22, following an illness of several months. He had been identified with the Carnegie Steel Co., at its Edgar Thomson works for 25 years. He was born in Port Perry, Pa., 57 years ago.

—

JOHN W. MYERS, Lorain, Ohio, president Wise Furnace Co., Akron, Ohio, died at his winter home in Daytona, Fla., Nov. 18, aged 68 years.

Government Costs More Than Food

(*Concluded from page* 1442)

"In the meantime, State and local indebtedness increased from a little over $3,250,000,000 in 1912, to $10,500,000,000 in 1924, and continues to grow at the rate of more than $1,000,000,000 a year. Substantially $4,000,000,000 of State and local expenditure is annually raised from direct land taxation.

"These figures excite little conception of their magnitude and significance, but what do they mean in agricultural terms? The value of the farm crops in 1924 would barely clear the existing State and local indebtedness. We are the greatest wheat, corn and cotton producers in the world, but the combined cotton, corn and wheat crop of 1924 would not equal the taxes required to support State and local government in that year, and the demand for additional levies increases more rapidly in cost than those crops in value.

"We are confronted, then, as citizens, not merely with $20,000,000,000 of national debt, but more than $10,000,000,000 of added State and local indebtedness, enlarging at the rate of more than $1,000,000,000 a year and inevitably lifting with it the cost of living as the interest upon the debt and the direct taxes upon land and income attach themselves to every service and commodity."

What Are the Remedies?

"HOW can changes in taxation be made to relieve the farmer?

"1. Have as little government as possible; nothing should be done by the government that can be done by its citizens.

"2. Retain local self government. The Federal government should do nothing that a State can possibly do, and the State should do nothing that a city or town can do, and the towns should do nothing that citizens or voluntary groups can do. The larger the unit of government the greater the cost and also the greater tendency to increase the work and costs.

"3. Keep the government out of business. Put contracts out to suitable bidders that the public may know the costs and remove so far as possible opportunity for graft.

"4. Pay as you go. Let us not lead into posterity a debt that properly belongs to us."

Exports Slightly Up in October

Structural Shapes Gain 6000 Tons—Drop in Boiler Tubes Offsets Upward Scrap Movement—Imports Higher

WASHINGTON, Nov. 23.—Totaling 141,817 gross tons in October, exports of iron and steel for the present year will not exceed much more than 1,700,000 tons if, during the remainder of the year, they are not above the average for the ten-month period. The October shipments exceeded those for September by a little more than 5000 tons, but fell 47,000 tons below the August figure. Imports of iron and steel in October amounted to 80,163 tons, a sharp increase over the incoming shipments for September, which totaled 68,445 tons.

The largest items of exports included tin plate and terne plate, at 14,712 tons. Boiler tubes and welded pipe came next, October shipments amounting to 14,239 tons. Of this movement 3548 tons consisted of casing and oil line pipe, 1051 tons going to Venezuela, 432 tons to Mexico and 337 to Trinidad and Tobago. Shipments of black welded pipe amounted to 5334 tons, of which 1025 tons went to the United Kingdom, 785 tons to Russia, 602 tons to Mexico and 572 tons to Canada. Exports of galvanized pipe amounted to 3155 tons, of which 591 tons went to Belgium, 422 tons to the Philippine Islands and 331 tons to Cuba.

The increase in imports in October over November was reflected in a number of lines, including pig iron, ferromanganese, structural shapes and tubular products. Of the pig iron imports in October, amounting to 37,709 tons, British India provided 16,533 tons, while shipments from the United Kingdom totaled 13,948 tons.

A striking figure in the October imports is that relating to nails and screws. The total incoming movement of these items was 1205 tons, which probably set a record. The nine-months total imports of nails and screws, amounting to 1153 tons, was exceeded by the October movement alone, according to records of the Bureau of Foreign and Domestic Commerce. Of the October imports of nails and screws, 1062 tons were credited to the Netherlands. But this tonnage is believed to have originated in Germany. It entered through the port of Galveston.

Imports of ferromanganese were scattered over an unusual range of countries. Usually the heaviest imports of this alloy come from the United Kingdom, but in October that country provided only 2659 tons of the total of 11,097 tons. The heaviest incoming shipments were from Norway, which provided 4260 tons. Sweden

Sources of American Imports of Iron Ore
(In Gross Tons)

	October		Ten Months Ended October	
	1925	1924	1925	1924
Chile	119,300	129,530	812,800	890,975
Cuba	37,000	21,027	414,130	242,213
Spain	8,045	9,880	138,170	56,736
Sweden	6,987	31,461	107,152	261,355
Algeria and Tunis	12,500	.....	159,995	.....
Canada	1,032	636	6,720	3,413
Other countries	19,405	8,241	65,230	187,109
Total	204,269	200,775	1,704,197	1,641,801

Imports of Iron and Steel Into the United States
(In Gross Tons)

	October		Ten Months Ended October	
	1925	1924	1925	1924
Pig iron	37,709	10,963	353,380	171,086
*Ferromanganese	11,097	8,193	62,337	33,089
Ferrosilicon	129	415	4,066	8,695
Scrap	4,807	4,771	76,237	50,058
Pig iron, ferroalloys and scrap	*53,742*	*24,342*	*496,020*	*262,928*
Steel ingots, blooms, billets and slabs	1,813	3,566	23,043	33,512
Wire rods	893	308	6,378	5,681
Semi-finished steel	*2,706*	*3,874*	*29,421*	*39,193*
Rails and splice bars	457	3,241	35,268	37,125
Structural shapes	7,374	4,792	68,658	34,233
Boiler and other plates	232	6	642	3,253
Sheets and saw plates	210	426	2,996	2,413
Steel bars†	3,410	.....	46,536	.....
Bar iron	1,083	380	10,153	3,706
Tubular products	8,835	2,995	63,169	46,756
Nails and screws	1,205	14	2,358	290
Tin plate	66	55	266	987
Bolts, nuts, rivets and washers	21	4	100	137
Round iron and steel wire	334	105	3,357	2,922
Flat wire and strip steel	190	99	1,800	1,841
Wire rope and insulated wire, all kinds	104	156	1,798	13,309
Rolled and finished steels§	*23,521*	*12,273*	*237,101*	*146,972*
Castings and forgings	194	384	2,645	2,526
Total	80,163	40,873	765,187	451,619
*Manganese ore	23,054	12,088	195,542	216,716
Iron ore	204,317	200,775	1,704,245	1,641,801
Magnesite	1,214	4,130	74,579	60,934

*Manganese content only, except shipments of ore from Cuba, which are stated in gross weight—128 tons in October, 1925.

†Steel bars have been separated from semi-finished products, in the Customs reports, only since Jan. 1, 1925.

§This includes some cast iron pipe, under the heading "tubular products."

Exports of Iron and Steel from the United States
(In Gross Tons)

	October		Ten Months Ended October	
	1925	1924	1925	1924
Pig iron	2,874	3,373	25,718	37,456
Ferromanganese	49	.....	4,150	3,145
Ferrosilicon	.....	32	.....	759
Scrap	10,329	1,773	72,514	89,121
Pig iron, ferroalloys and scrap	*13,252*	*5,179*	*102,382*	*130,481*
Ingots, blooms, billets, sheet bar, skelp	6,845	14,039	61,795	82,731
Wire rods	1,587	1,530	17,777	15,956
Semi-finished steel	*8,432*	*15,569*	*79,572*	*98,687*
Steel bars	8,704	9,036	91,090	87,687
Alloy steel bars	229	243	3,082	2,191
Iron bars	244	274	4,121	4,518
Plates, iron and steel	7,971	7,996	83,527	76,183
Sheets, galvanized	9,679	13,851	132,250	88,920
Sheets, black steel	6,999	17,753	72,793	128,713
Sheets, black iron	1,489	826	11,664	8,798
Hoops, bands, strip steel	3,200	2,078	32,876	28,652
Tin plate, terne plate, etc.	14,712	13,560	128,056	134,102
Structural shapes, plain material	13,796	8,081	82,452	86,539
Structural material, fabricated	5,829	7,232	56,711	61,304
Steel rails	9,437	13,241	140,270	171,116
Rail fastenings, switches, frogs, etc.	2,275	3,656	31,831	32,453
Boiler tubes, welded pipe and fittings	14,239	15,659	201,114	185,519
Plain wire	3,195	2,078	30,560	33,218
Barbed wire and woven wire fencing	6,148	9,636	59,355	76,473
Wire cloth and screening	170	100	1,497	1,468
Wire rope	263	278	3,649	3,740
Wire nails	1,041	902	7,778	19,930
All other nails and tacks	679	797	7,535	6,246
Horseshoes	50	103	592	863
Bolts, nuts, rivets and washers, except track	1,178	1,787	14,222	15,079
Rolled and finished steels	*111,527*	*129,167*	*1,197,925*	*1,363,707*
Cast iron pipe and fittings	4,135	3,501	27,001	24,336
Car wheels and axles	2,125	2,308	17,377	18,877
Iron castings	1,047	687	9,141	7,379
Steel castings	294	492	3,821	5,167
Forgings	122	168	1,860	1,347
Castings and forgings	*7,723*	*7,156*	*59,210*	*57,106*
All other	883	.....	10,302	.....
Total	141,817	157,071	1,448,491	1,539,981

Exports of Iron and Steel in Gross Tons

	All Iron and Steel	Pig Iron	Semi-Finished Material
*Average, 1912 to 1914...	2,406,218	221,582	145,720
*Average, 1915 to 1918...	5,295,333	438,462	1,468,020
*Average, 1919 to 1923...	3,078,724	123,837	149,218
January, 1924	247,942	3,812	8,594
February	164,820	4,773	11,463
March	123,618	4,047	2,278
April	131,276	4,117	8,275
May	154,136	4,317	4,895
June	163,770	2,057	11,178
Fiscal year 1924	2,009,343	40,596	119,744
July	137,481	1,796	10,363
August	134,628	4,365	6,127
September	135,979	4,799	15,473
October	157,071	3,373	15,569
November	123,577	1,478	8,649
December	128,865	2,549	7,081
Calendar year 1924	1,792,421	41,478	114,417
January, 1925	140,802	1,298	5,764
February	101,665	1,413	7,516
March	154,178	2,037	7,951
April	154,426	1,632	6,831
May	150,612	2,316	7,360
June	136,847	2,507	7,804
Fiscal year 1925	1,647,024	29,563	107,988
July	138,670	2,348	10,701
August	188,963	5,944	8,024
September	136,754	3,349	8,186
October	141,817	2,874	8,432
Ten months	1,448,491	25,718	79,572

*Calendar years.

Imports of Iron and Steel in Gross Tons
(By Months and Monthly Averages)

	Total Imports	Pig Iron	Ferro-alloys	Manganese Ore and Oxide*
January, 1924	26,675	10,587	3,033	23,081
February	42,269	15,482	4,847	4,430
March	39,278	16,919	3,941	46,067
April	50,969	17,171	7,371	29,729
May	66,801	25,220	5,501	31,993
June	60,569	28,697	2,347	24,726
July	30,410	13,511	1,435	12,287
August	44,928	16,189	1,120	16,160
September	45,214	16,347	3,578	6,269
October	40,873	10,963	8,608	12,088
November	35,707	9,880	7,596	19,919
December	69,281	28,143	10,530	28,305
Twelve months' average	46,370	17,426	4,992	21,672
January, 1925	77,058	41,344	7,165	15,498
February	92,373	47,803	10,997	9,666
March	92,106	50,803	5,691	24,330
April	71,249	33,299	7,699	14,941
May	68,117	21,260	8,721	29,139
June	82,330	35,657	4,259	20,720
Twelve months' average	62,449	27,099	6,440	15,578
July	64,642	24,881	3,601	28,586
August	68,489	30,707	3,526	34,168
September	68,445	29,917	3,594	22,709
October	80,163	37,709	11,226	23,054
Ten months' average	76,551	35,338	6,648	19,554

*Not included in "total imports." These figures are for manganese contents of the ore.

United States Imports of Pig Iron, by Countries, for October, 1925
(In Gross Tons)

United Kingdom	13,948	Summary:	
British India	16,533	Europe	20,377
Germany	3,351	Asia	16,810
Netherlands	1,906	America and miscellaneous	522
Canada	308		
Kwan Tung	277	Total	37,709
Belgium	1,172		
All other	214		
Total	37,709		

ranked second with 3155 tons. Imports from Canada amounted to 986 tons.

Of the total of 8835 tons of tubular products imported in October a large portion consisted of cast iron pipe. Imports of this latter product from France amounted to 3348 tons, while imports from Belgium totaled 350 tons.

Of the imports of structural shapes, amounting to 7374 tons, Belgium provided 4913 tons and the Netherlands 1851 tons. Belgium also provided 2001 tons of the total of 3410 tons of steel bars imported in October, and 619 tons of iron bars out of a total of 1083 tons. Steel bars imported from Sweden were 940 tons, while iron bars from that country were 363 tons.

American Participation in Foundry Congress at Liège

LIÈGE, BELGIUM, Nov. 2.—A congress roganized by the Association Technique de Fonderie de Belgique and by the Association Technique de Fonderie de France was held at Liège, Oct. 25 to 28. In opening the congress, Gustave Masson, president of the Association Technique de Fonderie de Belgique (A. T. F. B.), manager of the Ketin foundries at Chénée, recalled that in 1921 a similar congress was held at Liège, with the accompaniment of a foundry show, and that the first international congress on the foundry had been held in Paris in 1923. Now that the Americans are preparing a similar congress to be held next year in the United States, (at Detroit, week of Sept. 27, 1926) it was the intention of Belgium to reassemble an international gathering of foundrymen in 1930, when she will celebrate the hundredth anniversary of her independence. In concluding he thanked the Institute of British Foundrymen and the American Foundrymen's Association for the comprehensive papers they had sent to the A. T. F. B. for the congress of 1925, and specially referred to the presence of J. E. Hurst, representing the Institute of British Foundrymen, of Mr. Espana, vice-president of the Spanish branch of the Association Technique de Fonderie de Paris (A. T. F. P.), of Mr. Ronceray, director of studies at the Paris Foundry High School and representing the Association of the Czecho-Slovakian Foundrymen, and of Mr. Vazetti, delegated by the Italian metallurgists.

With Emile Ramas, president of the A. T. F. P. then in the chair, a group of papers was read, including the following: J. W. Bolton, Niles Tool Works, Hamilton, Ohio, who contributed a paper in the name of the American Foundrymen's Association on the connection of the constitution of gray iron with its mechanical properties. Mr. Ronceray regretted that the author was unable to be present, as the committee on new methods of testing iron of the Association Technique de Fonderie was in complete disagreement with Mr. Bolton. J. E. Hurst, Centrifugal Castings, Ltd., Kilmarnock, Scotland, discussed centrifugal molding. G. H. Clamer, Ajax Metal Co., Philadelphia, described the making of bearings for railroad service.

Increased Russian Iron Mining

WASHINGTON, Nov. 16.—The output of iron ore in the Soviet Union increased 117 per cent during the fiscal year ended Sept. 30, as compared with the fiscal year 1923-24, and that of manganese increased 29 per cent, according to a bulletin received by the Russian Information Bureau here. Production during various years in the different fields has been as follows:

Output of Iron Ores in Thousands of Metric Tons:

	1913	1923-4	1924-5	1925-6 (Program)
Krivoi Rog	6360	437	1240	2700
Ural	1802	465	760	1328
Other districts	527	40	50	83
Total	8689	942	2050	4111

Output of Manganese Ore in Thousands of Metric Tons:

	1913	1923-4	1924-5	1925-6
Nicopol	251	100	200	500
Chiatury	970	320	340	500
Total	1221	420	540	1000

During the past fiscal year the Soviet mining industry expended $2,400,000 on restoration and installation at Krivoi Rog, the Ural region and Nicopol. During the current fiscal year the expenditures will be $9,270,000. Of this amount over $2,000,000 will be spent for new equipment, mostly to be imported from Germany, $1,850,000 for electric stations, $1,900,000 for mining work and new installations. Seven mines hitherto inactive will be reopened at Krivoi Rog in addition to the eleven now under operation.

Some Betterment Noted in Europe

England Finds Stronger Demand—France Depends on Slashed Prices—Germany Quiet

(By Cablegram)

LONDON, ENGLAND, Nov. 23.

THERE is a stronger tone maintained in Cleveland pig iron. Continental business is expanding. Hematite is firm on active domestic and export demand and higher coke prices and ore freight rates.

Foreign ore is firm but business is still quiet. Bilbao Rubio is quoted at 20s. 6d. ($4.96) c.i.f. Tees.

Better inquiry is noted in finished steel from both domestic and export customers, but business is expanding only slowly.

Sheets and Tin Plate

Tin plate markets are steady. The makers have decided to introduce the pooling scheme at the beginning of next year. The mills now are running at about 85 per cent of capacity. Japan has bought 30,000 boxes of oil sizes in Wales.

Fresh demand for galvanized sheets has quieted, but makers are well booked and the tone is firm.

Black sheets are steady, though Japanese interest has become smaller.

On the Continent of Europe

Continental markets are quiet, but French makers have booked further large amounts of business at the expense of prices. Buyers are hesitant. The Belgian market is more resistant. The Charleroi stoppage continues and it is doubtful whether employers would resume operations immediately if an agreement were reached.

French rail makers have agreed to form a syndicate and it is believed that its formation is imminent.

In Germany output has been further reduced by the Phoenix Co., Westphalian Iron & Wire Works, Bochumer Verein and the Hoesch Iron & Steel Works. Most works are now operating at less than the authorized 65 per cent.

In Luxemburg the "Arbed" (Acieries Reunies de Burbach-Eich-Dudelange) and the Société Metallurgique des Terres Rouges have formed a "community of interest." [Arbed has 23 blast furnaces, nine open-hearth furnaces and 12 Bessemer basic converters in five plants. Terres Rouges has 11 blast furnaces and five Bessemer converters in two plants.]

Industry Nearing a Turn for the Better—Large Railroad Buying in Sight

LONDON, ENGLAND, Nov. 12.—Improvements, while still slow, are nevertheless becoming more marked and there are distinct signs that the steel trade as a whole is nearing the turn. Certainly more confidence is being displayed by users both at home and abroad and there is more disposition to enter into forward contracts. An encouraging feature is that shipments are maintained though the aggregate tonnage is not large, but the October returns just issued show that the exports from this country showed an increase on the month of nearly 100,000 tons, reaching the very respectable figure of 368,283 tons. The heavy purchasing of pig iron by United States consumers—the October shipments were over 20,000 tons or not far short of half the total quantity exported to all countries—gave the pig iron trade a fillip, and there is no doubt that home consumers, in particular, were attracted into operating with more freedom. At present costs, pig iron prices are undoubtedly low, but there is always the menace of Continental competition and this latter

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British and Continental European prices per gross ton, except where otherwise stated, f.o.b. makers' works, with American equivalent figured at $4.84 per £, as follows:

Durham coke, del'd..	£0 19½s.			$4.72	
Bilbao Rubio ore† ...	1 0½			4.96	
Cleveland No. 1 fdy.	3 8			16.46	
Cleveland No. 3 fdy.	3 6			15.97	
Cleveland No. 4 fdy.	3 5			15.73	
Cleveland No. 4 forge	3 4½			15.61	
Cleveland basic	3 5			15.73	
East Coast mixed....	3 15			18.15	
East Coast hematite.	4 19			23.96	
Ferromanganese	15 10			75.02	
*Ferromanganese ...	15 5			73.81	
Rails, 60 lb. and up..	8 0	to £8 15s.		38.72	to $42.35
Billets	6 0	to 7 10		29.04	to 36.30
Sheets and tin plate bars, Welsh	6 5	to 6 10		30.25	to 31.46
Tin plates, base box.	0 19¾	to 1 0¼		4.78	to 4.90
				C. per Lb.	
Ship plates	7 7½	to 7 17½		1.59	to 1.70
Boiler plates	11 10	to 12 0		2.48	to 2.59
Tees	7 12½	to 8 2½		1.65	to 1.76
Channels	6 17½	to 7 7½		1.49	to 1.59
Beams	6 12½	to 7 2½		1.43	to 1.54
Round bars ⅜ to 3 in.	8 2½	to 8 12½		1.76	to 1.86
Steel hoops	10 15	and 12 10*		2.32	and 2.70*
Black sheets, 24 gage	11 5	to 11 10		2.43	to 2.48
Black sheets, Japanese specifications	15 5			3.30	
Galv. sheets, 24 gage.	16 10, upward			3.57, upward	
Cold rolled steel strip, 20 gage	18 0			3.89	

*Export price.
†Ex-ship, Tees, nominal.

Continental Prices, All F.O.B. Channel Ports

Foundry pig iron: (a)					
Belgium	£2 18s.	to £2 19s.		$14.04	to $14.28
France	2 18	to 2 19		14.04	to 14.28
Luxemburg	2 18	to 2 19		14.04	to 14.28
Basic pig iron: (a)					
Belgium	2 18	to 2 19		14.04	to 14.28
France	2 18	to 2 19		14.04	to 14.28
Luxemburg	2 18	to 2 19		14.04	to 14.28
Coke	0 18			4.36	
Billets:					
Belgium	4 6	to 4 7		20.81	to 21.05
France	4 6	to 4 7		20.81	to 21.05
Merchant bars:				C. per Lb.	
Belgium	5 4	to 5 5		1.12	to 1.13
Luxemburg	5 4	to 5 5		1.12	to 1.13
France	5 4	to 5 5		1.12	to 1.13
Joists (beams):					
Belgium	4 17½			1.06	
Luxemburg	4 17½			1.06	
France	4 17½			1.06	
Angles:					
Belgium	5 0			1.08	
⅛-in. plates:					
Belgium	6 5	to 6 7½		1.35	to 1.39
Germany	6 5	to 6 7½		1.35	to 1.39
⅜-in. ship plates:					
Belgium	5 15	to 6 0		1.24	to 1.30
Luxemburg	5 15	to 6 0		1.24	to 1.30
Sheets, heavy:					
Belgium	6 14	to 6 15		1.45	to 1.46
Germany	6 14	to 6 15		1.45	to 1.46

(a) Nominal.

has been helped considerably by the continued fall in the franc.

In finished iron and steel, the heavy industries are still the worst sufferers from the lack of orders, new shipbuilding orders being restricted, but in the lighter products, especially sheets, unusual activity has been noticeable and rollers of thin black sheets and of ordinary corrugated galvanized sheets are fully booked up well into next year.

It is announced that the London & North Eastern Railway is laying down an extensive building program for next year. Forty-eight locomotives at a cost of £630,000 and over 7000 cars at a cost of more than £1,250,000 are to be built for the company in 1926.

Launchings from Belfast yards this year have reached 57,600 tons so far and there are eight new vessels at present upon the stocks.

GERMAN INDUSTRY QUIET

Consuming Plants Fairly Active—Output of Automobiles Reduced—Interest in Russia

BERLIN, GERMANY, Nov. 7.—The general business situation remains unchanged. Unemployment, as always in winter, slowly increases; but the absolute number of unemployed, 297,600 on Oct. 15, is relatively small.

In steel and allied branches a waiting tendency is observed. The chief cause is the delay in completion of the Western Steel Trust. The trust is in principle decided on. Negotiations with the finance ministry are proceeding with the aim of gaining a postponement or abatement of the heavy company and real estate taxes which will become due when it is formed. If a new corporation, holding all the stock of the member corporations, were founded, the capital tax alone on its proposed 800 million marks capital would be 32,000,000 marks which, in view of the general lack of fluid cash, would be difficult to pay at once. As to the indispensable foreign loan, it is understood that this can be obtained in the United States, and that possibly the lenders would participate also as shareholders.

Markets Still Inactive

The recent slight signs of greater activity in steel have not developed further. The scrap market is, however, more active, but prices are practically unchanged. The domestic iron ore market is very dull. Business in foreign ores is quiet. The Pig Iron Syndicate has announced unchanged prices and selling conditions for November The Raw Steel Syndicate has retained unchanged throughout November its reduction of 35 per cent in output. The demand for semi-finished material is fairly satisfactory, but there is heavy French competition in this and in finished products. Steel from Belgium, Luxemburg, Czechoslovakia and Austria has also come in in increasing quantities. Structural forms are weak. Bars are also dull. The home market for tubes is unchanged, but the export market has considerably improved, and a large order for South Africa has been booked by Thyssens. Wire is not in demand at home, and Germany is being undersold abroad. The demand for railroad permanent way material is considerable. The Railroad Corporation is strengthening, or reconstructing, a large number of bridges in connection with the introduction of 50-ton freight cars; large steel orders are expected as a result.

Locomotives and Machinery

Conditions in the metal-consuming industries are, with the exception of the shipbuilding and locomotive branches, fairly satisfactory. The shipbuilding depression is acute. Only 40 per cent of the full capacity of the yards is being utilized. The machine-building industries are unevenly occupied. For textile machinery there is a heavy demand. Orders have been booked for North America, Brazil, Czechoslovakia and Russia. The largest home demand comes from silk weavers. Export of machinery to Belgium has increased since the coming into force of the provisional German-Belgian commercial treaty. The steel syndicate's bounties to home manufacturers of machinery and other metal wares designed for export have been fixed for November (in marks per metric ton): Ingots, 10; blooms, billets and slabs, 15; bars, structural forms and wire rods, 22; tubes, 40; sheets from 15 to 20; dynamo sheets, 25; transformer sheets, 30. No bounty is granted on quality thin sheets (which are largely imported), or on tin plate.

The automobile industry is dull. The Aga Corporation (Edmund Stinnes) and several others, which began production of light cars on a mass scale, have been obliged to reduce their outputs, thereby increasing production cost. The prospect for import of American light cars has been somewhat improved by the Italo-German treaty.

Interest in Russia

Krupps have founded at Düsseldorf a new corporation called the "Krupp Eisenhandel Gesellschaft," for conduct of home and export trade. A large number of minor Russian orders have been received; and on these some German firms are giving credit for three years. A syndicate of German banks has provided a credit of 100,000,000 marks to enable Russia to buy German goods, and already considerable sales against this credit have been made. A commission of German engineers is leaving for Russia to investigate possibilities of Russo-German collaboration in the steel and engineering industries.

Foreign Trade Problems

Four reports by committees of the Chamber of Commerce of the United States were under consideration at the National Merchant Marine Conference in Washington, Nov. 16 and 17. These covered respectively Relation of Merchant Marine to American Foreign Trade and National Defense; Government Regulatory and Administrative Relations to the Shipping Industry; Government Aid to Shipping; Disposal of Government-Owned Merchant Ships. The first report makes elaborate analysis of trade routes of American ships, as to number of ships and tonnage engaged in the different routes. The American proportion of the total movement is indicated.

It is concluded that the United States will be unable to maintain an adequate merchant marine without some form of effective Government aid. The committee finds that the American shipowner and operator is handicapped by higher costs, both in building and operation, mostly due to higher wages. Present shipping board deficits, amounting to $24,000,000 per annum, are in effect subsidies. The committee proposed that such charges be made applicable to certain services, carefully thought out and adapted to increasing American prestige and developing particular markets.

Large Increase in British Steel Exports

WASHINGTON, Nov. 24.—Reaching a total of 368,823 gross tons, exports of iron and steel from Great Britain in October were the largest for any month since May, 1924, according to a cablegram received by the Departbent of Commerce from Commercial Attaché Mowatt M. Mitchell, London. Exports in September totaled 273,237 tons. The October increase was most noticeable in pig iron, galvanized sheets, tin plate, rails, other railroad material, wrought tubes, pipes and fittings, steel bars, rods, angles and structural steel.

Imports of iron and steel into Great Britain in October amounted to 218,250 tons, as against 199,046 tons in September. Receipts of semi-finished steel, iron bars, plates, sheets, and wire nails showed the heaviest gains.

A thermodynamic analysis of gas engine tests has been made by C. Z. Rosecrans and G. T. Felbeck and the result constitutes a bulletin issued by the Engineering Experiment Station of the University of Illinois, Urbana, Ill.

CANADIAN OUTPUT GAINS

Pig Iron and Steel Production Increases Sharply in October

TORONTO, ONT., Nov. 23.—The production of pig iron in Canada for the month of October totaled 74,013 gross tons, or more than double the 34,609 tons produced in September, and was the maximum output for any month since May, 1924, according to the Dominion Bureau of Statistics. The increase, while general in all grades, was principally in basic pig iron production, which rose 140 per cent to 61,379 tons, as compared with 25,579 tons in the preceding month. Foundry iron output increased slightly to 9381 tons from 9030 tons in September. There was also a production of 3253 tons of malleable iron, whereas none of this grade was produced during September. Of the total output 84 per cent was made for the further use of reporting firms, and the remaining 16 per cent was intended for sale. Ontario furnaces produced 65 per cent of the total tonnage and 35 per cent was made in Nova Scotia.

For the ten months ended with October, the cumulative production of pig iron was 446,973 tons, or 18 per cent under the 547,486 tons made during the same period last year. Of this year's output to date 344,809 tons was basic pig iron; 74,420 tons foundry iron, and 27,744 tons malleable iron. In addition to domestic production, imports of pig iron into Canada during the six months of the fiscal year ended with September amounted to 11,045 tons, as compared with 13,739 tons for the corresponding period last year.

While pig iron prices in the Canadian market remained unchanged in October, towards the latter part of November an advance of $1.50 per ton for delivery over the remainder of this year and $2 per ton for first quarter iron went into effect. Present prices at Toronto are are follows: No. 1 foundry (2.25 to 2.75 per cent silicon), $26.35; malleable, $26.35; No. 2 foundry (1.75 to 2.25 per cent silicon), $25.85. Montreal prices on all grades now stand at $28.75. Basic iron is quoted at $22, furnace. During the month of October two blast furnaces went in, but since the beginning of November, reduced operations at the Sault Ste. Marie, Ont., mills resulted in the blowing out of a blast furnace. There are now six furnaces blowing, located as follows: British Empire Steel Corporation, Sydney, N. S., three; Steel Co. of Canada, Ltd., Hamilton, Ont., two; Algoma Steel Corporation, Sault Ste. Marie, Ont., one.

Ferroalloy production in October at 2041 tons showed little change from the 2046 tons of the preceding month, and consisted mostly of the grade having high manganese content. Small quantities of ferrosilicon were also made, making the total output for the ten months of the calendar year 20,607 tons.

October output of steel ingots and castings at 108,868 tons, almost trebled the September production of 37,094 tons. For the ten months ended with October, total steel production was 617,137 tons, an increase of 3 per cent over the 601,707 tons reported for the same period last year. Although output of steel castings declined, the loss was more than offset by an increase in steel ingot production to 601,661 tons, as against 577,544 tons for the corresponding period in 1924.

COAST RATES REDUCED

Conference Ships Cut Carrying Charges from East $2 to $3 a Ton

SEATTLE, Nov. 18.—Effective Nov. 17, water freight rates on articles of iron and steel from Eastern seaboard to Pacific Coast points were reduced $2 per ton, or from 40c. to 30c. per 100 lb., while on steel pipe the cut was $3 per ton, or from 45c. to 30c. per 100 lb. Iron and steel articles that now take the 30c. rate are bands, bars, hoops, rods, slabs, strip steel, billets, blooms, ingots, muck bar, bolts, lag bolts, nut locks, nuts, rivets, screws and washers, iron conduits, boiler ends, boiler heads, plates, sheets (U. S. standard gage, 16 or heavier), ferromanganese, ferrosilicon, spiegeleisen, nails, wire, spikes, horseshoe nails, plates (not ship or boiler), steel rails, mining rails, cross ties, railroad track material, castings.

Rates on tin and terne plates, also sheets, were reduced from 50c. to 40c. per 100 lb. for 17 gage and lighter; all forms of structural steel from 55c. to 45c.; iron and steel mill rolls, from 70c. to 60c.; corrugated iron and steel ridge rolls, flashing, siding, from 60c. to 50c.; iron and steel pipe from 45c. to 30c.

These reductions have been made to meet the severe competition of what are known as nonconference or tramp boats which for months have been naming very low rates from Eastern seaboard to the Pacific Coast, and have been getting a large part of the traffic, also in order to obtain more deadweight tonnage than the conference boats have been getting for some time. Any possibility that the railroads may advance rates from the East to the coast is naturally affected by the lowered water rates. The railroads claim that at the present rate of 70c. per 100 lb. they cannot make any money.

Lower Prices on Steel Pipe

The reduction in water rates has had the effect of temporarily holding up new demand for iron and steel products, local jobbers and consumers saying that the saving of $2 per ton in delivered prices should be passed along to them, but some sellers have taken the position that the $2 should go to the mills. However, it is likely that buyers will get the advantage as already some of the pipe mills have reduced delivered prices on pipe $3 per ton. In fact, this was done before the general reduction in water freights was announced.

Conditions in the local steel trade show no material change and are only fairly satisfactory. Jobbers report that volume of business in November will be slightly less than in October. New buying is mostly in small lots, buyers apparently having no fears of higher prices in the near future.

Plates Sold at 2.20c.

Plates are weak. A contract for 365 tons for a water line at Auburn, Wash., just closed, is reported to have been placed at 2.20c. delivered, which is at least $1 per ton under what has been regarded as the market. Most mills ask 2.25c. to 2.30c.

The largest structural job in sight is the Vantage Ferry bridge across the Columbia River, 2200 tons, bids on which are to be opened on Dec. 1. It is said that some low prices have gone in on this job, one bid being less than $80 per ton for fabricated material, delivered. Beams and channels are quoted here at 2.25c. to 2.30c.

Two local representatives of Eastern sheet mills have advanced their prices $5 per ton on all grades, but no sales have been made at the higher prices, jobbers and consumers being covered over the remainder of the year, and some jobbers claim they are filled on sheets into first quarter.

Production in Terms of 1913

If the production of Alsace-Lorraine is taken into account, the French production of pig iron and steel in 1924 was less than that of 1913. In pig iron both Great Britain and Luxemburg also produced less than in 1913. According to a report of the Comité des Forges of France, the following table shows the ratio of 1924 production to that of 1913:

Production in 1924 Compared with That in 1913

	Pig Iron, Per Cent	Steel, Per Cent
France	84.8	98.9
United Kingdom	71.0	107.2
United States	100.4	117.0
Belgium	113.0	115.9
Luxemburg	84.6	142.2

Business Upswing

(*Concluded from page* 1459)

toward the end of October this stability is equivalent to a higher trend. In a word, the *trend* of money rates in October continued slightly upward.

Building activity as measured by the F. W. Dodge Company's figures for square feet of floor space in building contracts actually awarded, declined more than usual for the season. This is the first decline in our adjusted index of building activity which has occurred since May. Usually there is some increase in building activity in October as compared with September. This year, however, contracts awarded totaled 82,577,000 square feet against 86,167,000 square feet in the preceding month. This is the largest October decrease in recent years.

On the whole, the trend of interest rates on commercial paper has been upward since September, 1924. Although the rise has been sharp and the rate itself is still moderate, this upward trend in the money market is tending to curtail speculative building. The effect of rising money markets on building activity usually becomes apparent in from 12 to 18 months. It is not yet certain that a further increase in building activity will not occur in January and February, 1926, but it is believed that the end of the post-war building boom is now in sight and that a gradual decline may be expected to begin before the first half of 1926 is over.

Simplification of Self-Opening Die Heads

WASHINGTON, Nov. 24.—Proposals for the simplification of self-opening die heads will be considered at a conference to be held, Dec. 4, under the auspices of the Division of Simplified Practice. Those invited to attend include manufacturers, machine supply dealers and other distributors, engineers, works superintendents, Government representatives, purchasing agents, and others. In issuing the invitations the division called attention to the fact that many manufacturers whose major output is not less than 100 sizes have been asked to furnish as many as 12,000 lots of chasers, none of which had sufficient demand to justify manufacture for stock.

A committee of manufacturers, after consultations with the National Screw Thread Commission, has drafted a tentative list of the essential minimum number of sizes. It is declared by the manufacturers' committee that the proposed list will cover the thread forms and pitches that are obtainable at the least cost of time and money.

Wholesale prices of commodities are lower, as reported by the United States Bureau of Labor Statistics. The general average in October was 157.6, compared with 159.7 in September and with 151.9 in October, 1924. Metals and metal products, at 127.9, remain the lowest of all groups. Both branches of this group advanced during October, iron and steel from 133.7 to 134.2 and non-ferrous metals from 113.1 to 114.3. General commodities are almost precisely at the average of the previous 12 months; the metals are 1.6 per cent lower.

The American type of automatic coupling is being installed on freight and passenger cars on lines of the Imperial Government Railways by the Japanese Railway Department, taking the place of couplings employed in European railroad practice with so-called hook and link coupling and spring bumpers, says a report received by the Department of Commerce.

Particulars and details of the new standard hose connection for welding and cutting torches have been compiled in a leaflet obtainable from the Gas Products Association, 140 South Dearborn Street, Chicago. The development promises to prove an important forward step of direct interest to users of welding and cutting equipment.

INDUSTRIAL RESEARCH

British View That United States Is Forging Ahead Because of It

An editorial in *Engineering*, London, laments the meager amounts of money available in England for research work, as compared with those in the United States. It pays high tribute to American acumen in connection with the use of research as a means of developing products and business. A portion of the editorial is covered below:

> Looked at in the gross, British expenditure on scientific research seems short of what would be reasonably adequate. The forces have indeed some £2,500,000 for "Scientific Experiment and Research" for the current year. But this includes much routine testing and other work that is certainly not research in any sense. The Department of Scientific and Industrial Research has a budget of about £500,000. But, when this is compared with what the United States is spending, it is disquietingly small.
>
> In 1921 an American return showed over $22,000,000 available annually for non-commercial research and one American commercial company has been spending $9,000,000 a year on research, employing 3,000 workers in its laboratories, with such profit that it was arranging to increase them to 5000. It is difficult to believe that these vast expenditures have had nothing to do with the extraordinary rate at which technical enterprise has progressed in the United States during this century. A reasonable construction is to assume that Americans know their own business, would not spend their money in this way if it were not profitable, and have discovered and put into practice, to their own legitimate advantage, what we have more or less been playing with.

An Associated Press dispatch from Washington, dated Nov. 4, states that "approximately $35,000,000 is being spent annually by American manufacturers in research work, the United States Chamber of Commerce estimated today, and probably $500,000,000 annually is being saved in the conduct of industry as a result. In a statement describing some of the principal activities now in progress, the chamber said that the majority of trade associations are spending more than $20,000 each, annually, in cooperative research work, while large corporate units are spending much more."

Copper-Clad Asphalt Shingles

Commercial production of a copper covered nonmetallic substance, long the dream of electrometallurgists, has been accomplished and put to industrial use, according to an announcement made by the Anaconda Copper Mining Co. The success of the new process unites the interests of two large industries, copper and asphalt, in the production of roofing materials. The achievement gives the country a new product—copper-clad asphalt shingles. The roofing is asphalt covered and impregnated with copper. The process of manufacture is termed "galvanoplastry."

The Lincoln Electric Co., Cleveland, this fall, in cooperation with the Cleveland School of Technology, will extend the facilities by which young men are being trained in electric arc welding. The school is part of the Y. M. C. A. educational system. The plan provides for alternating five-week training courses in the manufacturing plants and in the class rooms of the school. The students are paid for their factory work.

Domestic natural graphite sold in the United States in 1924 is reported by the Bureau of Mines at 4971 net tons valued at $87,510. Graphite manufactured by the Acheson Graphite Co., Niagara Falls, N. Y., is given as 5493 net tons. Both production figures are considerably below those of the previous year, which included 6039 tons of natural graphite and 13,380 tons of manufactured graphite. Imports of graphite into the United States in 1924 were 16,375 net tons, or about 16 per cent less than in 1923.

Machinery Markets and News of the Works

NOVEMBER SALES FALL OFF

Machine Tool Business in Some Sections Not Equaling October Record

Territory in and Around Detroit Continues to Furnish a Considerable Share of Current Orders

NOVEMBER sales of machine tools have not measured up to expectations based on October business. This is particularly the case in Eastern territory, but a similar report comes from Chicago. Machine tool plants, however, are busy and deliveries on some types of tools are being further extended. Intimations are current of probable price advances on some lines.

The Yellow Coach Mfg. Co., Chicago; the Nash Motors Co., Kenosha, Wis.; the Seaman Body Corporation, Milwaukee; the Continental Motors Corporation, Muskegon, Mich.; the Eaton Axle & Spring Co., Cleveland, and the Brooklyn-Manhattan Transit Co., Brooklyn, have been purchasers of equipment during the week.

The Nickel Plate Railroad has sent out a preliminary inquiry for 15 to 20 machines with a view to preparation of its 1926 budget.

New York

NEW YORK, Nov. 23.

MACHINE tool buying continues in moderate volume, with the total this month having shown a falling off on some lines as compared with October. Visiting machine tool men from the Central West report that the New York and New England territories are furnishing the smallest part of the total business which plants in that section are receiving. The district furnishing the largest volume of orders are those in which Chicago and Detroit are the centers. The Brooklyn Rapid Transit Co. is making purchases against a list issued some months ago. An 1100-lb. steam hammer was among the machines it bought last week.

The Watson-Stillman Co., 50 Church Street, New York, has purchased from the National Indicator Co., Long Island City, N. Y., its rights to the manufacture and sale of braiding machines. The Watson-Stillman Co. will manufacture these machines in its plant at Aldene, N. J.

The Dreier Iron Works, Inc., 338 East Fifty-ninth Street, New York, manufacturer of steel and ornamental iron work, has acquired a property at Avenue D, Drydock Street, East Eleventh and Twelfth Streets, 206 x 269 ft., for a new plant.

Frank Mongiello, 1368 Madison Street, Brooklyn, and associates are having plans drawn for a one-story ice-manufacturing plant, 125 x 130 ft., at Woodhaven, L. I., to cost about $100,000 with equipment. Louis A. Hornum, 405 Lexington Avenue, New York, is architect.

The American Water Works & Electric Co., 50 Broad Street, New York, has arranged for a bond issue of $8,000,000, a portion of the proceeds to be used for expansion.

The New York Central & Hudson River Railroad Co., Grand Central Terminal, New York, has acquired 4½ acres on the river front, near Ludlow Station, Yonkers, N. Y., and plans the construction of several mechanical buildings and freight terminal, to cost about $500,000 with equipment.

The Argus Radio Corporation, 25 West Eighteenth Street, New York, has inquiries out for a lathe, 12-in. swing.

Fire, Nov. 9, damaged a portion of the machine shop of the T. H. Lewthwaite Machine Co., 411-15 East Thirty-first Street, New York.

The New York Central Railroad Co., C. S. White, room 344, 466 Lexington Avenue, New York, purchasing agent, is asking bids until Dec. 3 for requirements for wire fence, posts, etc., as covered by serial contract No. 32-1925.

The Westinghouse Lamp Co., 150 Broadway, New York, has awarded a general contract to Stone & Webster, Inc., 147 Milk Street, Boston, for a two-story addition to its plant at Bloomfield, N. J., 93 x 115 ft., to cost $45,000.

Charles Cohen, 308 Oakland Street, Brooklyn, manufacturer of automobile bodies, has plans under way for a one-story addition, 25 x 100 ft. J. McKellop, 527 First Street, is architect.

The American Can Co., 120 Broadway, New York, has acquired property adjoining its branch plant at Ogden, Utah, and plans the erection of an addition, to cost more than $200,000 with equipment.

The Motor Inn, Inc., R. T. Lipscombe, Jr., 1194 Second Avenue, New York, head, recently organized under Delaware laws has awarded a general contract to the Turner Construction Co., for a fifteen-story automobile service, repair and garage building at 346-50 West Thirty-ninth Street, extending through to Thirty-eigth Street, to cost $1,500,000 with equipment. Parker & Shaffer, 280 Madison Avenue, are architects.

The Lackawanna Railroad Co., 90 West Street, New York, has applied for permission to electrify its freight terminals at Twenty-fifth Street and in the Wallabout district, Brooklyn.

The Atlas Foundry Co., 517 Lyons Avenue, Irvington, N. J., has filed plans for a one-story addition.

The Tidewater Oil Sales Co., 11 Broadway, New York, has plans for a one-story storage and distributing plant on North Avenue, Dunellen, N. J., consisting of three buildings, to cost $80,000.

Fire, Nov. 20, destroyed a portion of the plant of the Howe Paper Box Co., Park Place, Passaic, N. J., with loss estimated at $50,000 including equipment.

The Safety Cable Co., Bayonne, N. J., has acquired a controlling interest in the A-A Wire Co., Inc., Kingsland Avenue, Harrison, N. J., and will consolidate with its organization. Extensions in production are planned. The purchasing company recently took over the plant and property of the Phillips Wire Co., Pawtucket, R. I.

The Board of Freeholders of Bergen County, Court House, Hackensack, N. J., has rejected bids recently received for a one-story steam power house at the Bergen County Hospital, Oradell, to cost $75,000, and expects to ask new bids on revised plans later. H. R. Kent & Co., 5 Erie Avenue, Rutherford, N. J., are engineers.

The Landisville Electric Co., Landisville, N. J., will issue stock in amount of $35,000, a portion of the fund to be used for extensions and improvements.

The plant of the Levene Steel Products Corporation, Port Avenue and Third Street, Elizabeth, N. J., manufacturer of steel shelving, cabinets, etc., has been placed on the market, including equipment.

The Public Service Corporation, Public Service Terminal, Newark, N. J., has work under way on a one-story addition to its machine shop and repair works at West Burlington, N. J.

The General Tube Co., 56 Earl Street, Newark, manufacturer of steel tubing, has filed plans for a one-story factory, 90 x 200 ft., at 49-55 Empire Street, to cost about $50,000. It is understood that the present works will be removed to the new location and considerably extended. Simon Cohen, 130 Branford Place, is architect.

The Horseshoe Lock Co., Inc., 484 Broadway, New York, has been organized with a capital stock of $15,000 to manufacture patented door locks. For the present manufacturing will be done by contract and the company is desirous of hearing from concerns in position to do this work.

The Ideal Power Lawn Mower Co., 13 Hudson Street, New York, has leased a portion of a building at 237-239 Lafayette Street, comprising 10,000 sq. ft. of floor space.

New England

BOSTON, Nov. 23.

NOVEMBER is not measuring up to expectations of the machine tool trade. The past week witnessed a further falling off in sales, especially of new equipment, and a corresponding decrease in new inquiries. Recent business was confined largely to used tools in single lots and included grinders, presses, drills and bench lathes. Buying was by small shops with the exception of a sizable grinder which was purchased by a manufacturer of machine tools. Large manufacturers having inquiries out are apparently in no hurry to close. The opinion among buyers that machine tool prices may be higher is dissipating. One local shop having in mind the purchase of several presses has abandoned the inquiry. By the installation of safety devices it has not only eliminated the danger of accident, but has materially increased production. A manufacturer of electrical appliances, also considering the purchase of presses, is installing similar safety devices. Elsewhere there is a tendency to hold up purchases of mechanical equipment. This policy is significant in view of the fact that New England metal working plants are busier than they have been in several months.

At a meeting of the directors of Rolls-Royce of America, Inc., Springfield, Mass., it was intimated that tentative plans have been made for the manufacture of aero engines in addition to automobiles, and to increase the number of employees from 1000 to 5000. Plans also are in progress for the erection of an airplane manufacturing plant at Hartford, Conn., and two or three other companies are figuring on the production of aero engine parts. These plans, if brought to a conclusion, will mean much for the New England machine tool trade.

The United States Navy has purchased a large air compressor outfit for the Charlestown Navy Yard.

The city of Boston is calling for bids on ventilator fans, motors, etc., for the Central Public Library.

Plans are being drawn for a large automobile repair and paint shop at 25 Paul Street, Newton, Mass., for Thomas H. Davis, 62 Union Street, Newton. Kendall, Taylor & Co., 142 Berkeley Street, Boston, are the architects.

The Charles W. Wright Co., Lynn, Mass., has been awarded contract by the General Electric Co. to erect a one-story, 60 x 100 ft. oxygen and hydrogen plant. Plans are private.

Negotiations are about completed whereby the Mexican Petroleum Co., 120 Broadway, New York, will acquire approximately one-half of the property of the Groton Iron Works Liquidating Corporation, New London, Conn. Plans call for the erection of storage tanks, machine shop and other units.

The Gillette Safety Razor Co., South Boston, has awarded contracts to the Turner Construction Co. for the erection of an eight-story and basement, 73 x 167 ft. blade manufacturing plant, and a nine-story 75 x 152 ft. handle manufacturing plant.

The Liberty Iron Works, Bridgeport, Conn., recently organized, has established a light structural steel and ornamental iron works at 170 Alice Street, and plans extensive production. Morris Rosenblatt heads the company.

The Milton Ice Co., Milton, Boston, will erect a new one-story plant at 45 Babson Street, to cost $28,000.

The Chemical Treatment Co., Waterbury, Conn., with headquarters at 26 Broadway, New York, will establish a metal plating plant in the local factory of the National Tube Co., recently acquired. Production will be carried out under a special process. F. W. Olmstead and W. A. Tyrrell are company officials.

The Thompson Wire Co., 41 Mildred Street, Dorchester, Boston, will soon begin superstructure work on its proposed addition to cost $40,000. Brainerd & Leeds, 89 Franklin Street, are architects.

The Raybestos Co., Bostwick and Railroad Avenues, Bridgeport, Conn., manufacturer of automobile brake lining, etc., has awarded a general contract to the T. J. Pardy Construction Co., 1481 Seaview Avenue, for a two-story addition, 97 x 158 ft., to cost $50,000.

The Boston Ice Co., 110 State Street, Boston, has foundations under way for a one-story plant, 154 x 200 ft., at 218 Albany Street. A list of machinery will soon be arranged. C. Leslie Weir, 41 East Forty-second Street, New York, is engineer.

Fire, Nov. 14, destroyed a portion of the plant of the Ira G. Hersey & Sons Co., 46 Plympton Street, Boston, woodworking, with loss reported at $10,000 including equipment. It is planned to rebuild.

The Union Drawn Steel Co., 775 Capital Avenue, Hartford, Conn., has plans for a one-story addition, 58 x 255 ft., to cost about $45,000.

Fire, Nov. 18, destroyed a portion of the plant of the Metropolitan Charcoal Co., East Dedham, Mass., with loss estimated at $20,000 including equipment. Plans for rebuilding are under advisement.

The du Pont Fabrikoid Co., Fairfield, Conn., a subsidiary of E. I. du Pont de Nemours & Co., Wilmington, Del., will make extensions and improvements in its plant to cost about $65,000, including an addition to the heater and oven building, and one-story extension, 47 x 127 ft., to the spreader department.

The American Brass Co., Waterbury, Conn., has awarded a general contract to the Tracy Brothers Co., 52 Benedict Street, for a three-story addition, 60 x 135 ft., to cost $70,000 with equipment.

A machine and repair shop will be installed in the two-story pumping station to be erected by the Board of Water Commissioners, Westerly Water Works, Westerly, R. I. Walter T. Arnold, Meriden, Conn., is architect.

The Derby Gas & Electric Co., Derby, Conn., has plans nearing completion for a three-story mechanical repair and service building to cost about $50,000 with equipment. R. W. Foote, New Haven, Conn., is architect.

Philadelphia

PHILADELPHIA, Nov. 23.

PACKARD, INC., 319 North Broad Street, Philadelphia, local representative for the Packard automobile, has asked bids on a general contract for a new service, repair and headquarters building to cost $250,000. Philip S. Tyre, 1509 Arch Street, is architect.

The Jessup & Moore Paper Co., Commercial Trust Building, Philadelphia, is disposing of a bond issue of $2,250,000, about one-fourth of the proceeds to be used for proposed extensions and improvements in its Augustine mills, near Wilmington, Del. Eugene W. Fry is president.

The Board of Education, Keystone Building, Philadelphia, has plans for remodeling and converting the three-story and basement normal school on South Spring Garden Street into an industrial school. A list of equipment to be installed will soon be arranged. Irwin T. Catherine, Keystone Building, is architect.

The Philadelphia Electric Co., Tenth and Chestnut Streets, Philadelphia, has completed the first unit of its new steam-operated generating plant on the Delaware River, between Lewis Street and Erie Avenue, with capacity of 50,000 kw., and will proceed with the erection of additions for other units of the same size. The ultimate plant will consist of 12 units and will cost more than $20,000,000. Joseph B. McCall is chairman of the board.

I. Halpern Brothers & Co., Inc., 1333 North Front Street, Philadelphia, metals, has taken bids on a general contract for a new plant on Erie Avenue consisting of three buildings, to cost $85,000. Edwin L. Rothschild, 1420 Chestnut Street, is architect.

The H. Brinton Co., Kensington and M Streets, Philadelphia, manufacturer of knitting machinery, has acquired a foundry building at Paul and Van Dyke Streets for $40,000 and will use for plant service.

The Philadelphia Rapid Trasit Co., 810 Dauphin Street, Philadelphia, is arraging for a preferred stock issue of $15,000,000, of which $5,000,000 will be used for general expansion and operation. Of the latter amount, a fund of $1,400,000 will be appropriated for extensions and improvements in carbarns, shop facilities and other work. Thomas E. Mitten is chairman of the executive committee.

The Certain-Teed Products Corporation, Second Street and Erie Avenue, Philadelphia, manufacturer of roofing, etc., has acquired land on West Front Street, totaling 41,200 sq. ft., for proposed expansion.

The Golding Sons Co., Trenton, N. J., producer of feldspar and other kindred mineral products, has acquired the Erwin Feldspar Co., Erwin and Knoxville, Tenn., totaling about 12,000 acres of feldspar lands, mills, etc., for $2,500,000. The purchasing company will continue the Erwin company on the present basis operating as a subsidiary. Plans are under consideration for extensions and improvements for increased output. Herbert P. Margerum is one of the heads of the Golding organization.

The Crane Market

INQUIRY for both electric overhead and locomotive cranes has slackened considerably with only a moderate volume of business pending. The Delaware, Lackawanna & Western Railroad is reported to have closed on one of its three gantry cranes and there have been a few other small purchases of overhead equipment. There is an inquiry from the Port of Angeles, Wash., bids on which will be opened by the Port Commission, 617 West Second Street, Angeles, Wash., Dec. 9, calling for a 5-ton, 95-ft. radius hammer head crane.

In the Pittsburgh district the Carnegie Steel Co. is inquiring for 15 cranes for its Homestead works with further inquiry expected soon. The Weirton Steel Co., is regarded as a prospective buyer although no formal inquiry has been sent out by the company.

Among recent purchases are:

Delaware, Lackawanna & Western Railroad, a 15-ton gantry crane for Buffalo, N. Y., reported purchased from the Toledo Crane Co.

Cliffside Iron Works, Cliffside, N. J., a 3-ton, 26-ft. 3-in. span hand power crane from Alfred Box & Co.

Colonial Slate Co., Wind Gap, Pa., a 10-ton, 51-ft. span, 3-motor overhead crane from Alfred Box & Co.

Samuel Cresswell Iron Co., Philadelphia, a 1-ton, 26-ft. span, 3-motor transfer crane from Alfred Box & Co.

Heintz Mfg. Co., Philadelphia, a 10-ton, 24-ft. span, 3-motor overhead crane, and a 5-ton, 19-ft. span, 2-motor crane from Alfred Box & Co.

Gulf States Utilities Co., Beaumont, Tex., a 5-ton, 16-ft. span hand power crane from Alfred Box & Co.

Clifton Ice Co., Clifton, Pa., a 2-ton, 40-ft. span, 3-motor overhead crane from Alfred Box & Co.

Cresent Ice Co., Philadelphia, a 2-ton, 40-ft. span, 3-motor overhead crane from Alfred Box & Co.

American Spiral Pipe Co., Chicago, a 7½-ton, 34-ft. span, hand power crane from Alfred Box & Co.

American Fabricated Steel Co., Philadelphia, a 10-ton, 55-ft. span, 5-motor, double trolley, overhead crane from Alfred Box & Co.

International Petroleum Co., Toronto, Ont., 5-ton, 33-ft. span, hand power crane from Alfred Box & Co.

New England Public Service Co., Hillsboro, N. H., a 20-ton, 27-ft. span, 1-motor crane for Jackson power development, from Alfred Box & Co.

Florida East Coast Railway, two hand power transfer cranes, 26-ft. span and one jib crane for St. Augustine, Fla., from H. D. Conkey & Co.

Dravo-Doyle Co., Cleveland, a 5-ton, electric traveling crane with electric hoist, from H. D. Conkey & Co.

St. Mary's Oil Engine Co., St. Louis, one hand power jib crane from H. D. Conkey & Co.

The machine and forge shops at the Tickleback Colliery, Shamokin, Pa., were partially destroyed by fire Nov. 17. An official estimate of loss has not been announced. Rebuilding is under consideration.

The Metropolitan Edison Co., Reading, Pa., has begun the construction of the second unit of its new steam-operated generating plant at Middletown, Pa., at the junction of the Susquehanna River and Swatara Creek, to cost more than $500,000, and plans the early installation of equipment.

The Lehigh Valley Railroad Co., 143 Liberty Street, New York, is planning for enlargements in its engine house and shop facilities at Easton, Pa. Application has been made to the city for the vacating of Valley Street, from Zane to Canal Street, to allow for the expansion.

The Weatherly Foundry & Mfg. Co., Weatherly, Pa., has acquired the plant and equipment of the Hazelton Iron Works, which recently closed down. The purchasing company will remove the foundry and other departments to its Weatherly works, which will be expanded for a new department devoted to iron castings and equipment for collieries.

The Crooks-Dittmar Co., Williamsport, Pa., manufacturer of flooring and other millwork products, has construction under way on a new plant on an 11-acre tract, consisting of main mill, 245 x 385 ft.; power house, 45 x 55 ft.; storage, distributing and other buildings, to cost approximately $400,000. It is proposed to have the plant ready for operation early in the coming year.

Fire, Nov. 13, destroyed a portion of the plant of the Shenandoah Lumber Co., Shenandoah, Pa., with loss reported at $70,000. The fire also damaged the storage and distributing works of the Union Hardware Co., and the Dunlap Hardware Co., in the immediate vicinity. Plans for rebuilding are under advisement.

The Lehigh Portland Cement Co., Allentown, Pa., has acquired limestone properties near Hazen, vicinity of Belvidere, N. J., and is said to be planning the early installation of quarrying machinery and other equipment. The output will be used at the new mill of the company now in course of construction at Sandt's Eddy, near Martin's Creek, Pa.

Buffalo

BUFFALO, Nov. 23.

CONTRACT has been let by the Trico Products Corporation, 624 Ellicott Street, Buffalo, manufacturer of automobile equipment, to Metz Brothers, Buffalo, for a five-story addition, 50 x 131 ft., to cost about $150,000. Plumer & Mann, 700 Main Street, are architects.

Fire, Nov. 17, destroyed a portion of a one-story building at the plant of the Buffalo Spring Co., 146 Virginia Street, Buffalo, with loss reported at $10,000. It is planned to rebuild.

The Lamson Co., Eastwood, near Syracuse, N. Y., manufacturer of pneumatic conveying apparatus, etc., has awarded a general contract to the H. K. Ferguson Co., Cleveland, for a one-story addition, 60 x 200 ft., to be equipped as a structural shop.

The Buffalo General Electric Co., Electric Building, Buffalo, has taken out a permit to erect a one-story automatic power substation at 955 Bailey Avenue, estimated to cost $50,000.

The Huntley Mfg. Co., Silver Creek, N. Y., manufacturer of flour mill machinery, etc., has taken formal possession of the plant of the Paul DeLaney Co., Brockton, N. Y., secured at a bankruptcy sale for $130,000, and is said to be arranging for the early establishment of a new plant.

F. M. Rich, formerly of 94 Parkwood Avenue, Kenmore, N. Y., advises that he is not contemplating the erection of an assembling plant as stated in our issue of last week.

A power plant and electrically operated equipment will be installed by the Spaulding Baking Co., Binghamton, N. Y., in connection with its new plant at Elmira, for which a general contract has been awarded to the Lowman Construction Co., Elmira. It will cost $200,000 with equipment.

The Kulp Co., Inc., Olean, N. Y., manufacturer of novelties, has work under way on a one-story factory at Ellicottville, N. Y., for which some machinery, transmission and handling equipment will be required.

South Atlantic States

BALTIMORE, Nov. 23.

REFRIGERATING MACHINERY, conveying and other apparatus will be installed in the three-story plant, 100 x 170 ft., to be erected by the Maryland Creamery Co., 1726 East Pratt Street, Baltimore, at 127-35 Register Street, to cost about $200,000. McCormick & Co., 121 South Negley Street, Pittsburgh, are architects and engineers.

The Lehigh Portland Cement Co., Allentown, Pa., has acquired the plant and property of the Tidewater Portland Cement Co., Union Bridge, Md., at a receiver's sale for $3,305,000 and will take possession within 60 days. The new owner plans improvements and will operate as a branch mill.

A one-story steam power house will be erected by the Arthur G. Jones Woolen Mills Corporation, Winchester, Va., in connection with a number of mill additions.

George S. Childs, 306 St. Paul Street, Baltimore, architect, has plans for a two-story automobile service, repair and garage building, 100 x 235 ft., to cost about $100,000 with equipment.

Fire, Nov. 13, destroyed a portion of the plant of the American Agricultural Chemical Co., South Greenwood, S. C., with loss estimated at $70,000, including equipment. Plans for rebuilding are under advisement. The company manufactures fertilizer products. Headquarters are at 2 Rector Street, New York.

The Cities Service Co., 60 Wall Street, New York, is said to be planning for extensions and improvements in its power house at Bristol, Va.-Tenn., with additional equipment installation, to cost $400,000.

The Smith & Williams Co., Salisbury, Md., recently organ-

ized to take over and operate the local Smith & Williams shipbuilding plant, has plans for a two-story addition, to be used for shop, mold loft and kindred service. J. S. Smith is president.

The Hunter Machinery Co., Marion, N. C., has inquiries out for 150-hp., three horizontal return tubular boilers, complete with accessories; also one 60-hp. boiler, firebox type on wheels or skids.

The Georgia Railway & Power Co., Atlanta, Ga., is disposing of a preferred stock issue of $4,000,000, a portion of the proceeds to be used for extensions and improvements, including hydroelectric power development on the Tallulah and Tugalo Rivers. H. M. Atkinson is chairman of the board.

The Columbus Fertilizer Co., Columbus, Ga., has work under way on remodeling the former mill of the Virginia-Carolina Chemical Co., recently acquired. The company has removed machinery from its former plant at Eleventh Street and Tenth Avenue, and will install equipment to more than triple the output of the mill. Drane Bullock is president, and L. W. Cunningham, secretary and treasurer.

The City Council, Cochran, Ga., has plans for the construction of a municipal ice-manufacturing plant, to be operated in conjunction with the city-owned electric plant and waterworks.

The Wilson-Hock Co., Hopewell, Va., machinery dealer, has inquiries out for a 20-ton locomotive crane, 50-ft. boom, without bucket; one 150-hp. horizontal automatic or Corliss belt-driven engine; one 500-kw. turbo-generator, three-phase, 60-cycle; one 200-kw. direct-connected generator unit, 3-phase, 440-volt, 60-cycle; one rotary vacuum dryer, 5 ft. diameter and 30 ft. long; one 100-kw. generator belted with exciter, three-phase, 200-volt, 60-cycle.

The Moore Lumber Co., Culverton, Ga., is in the market for a horizontal return tubular boiler, 150 to 200 hp., to operate at 125 lb. working pressure.

The Hess Body Corporation, Hagerstown, Md., recently formed with a capital of $600,000, will take over the local plant of the Hess Mfg. Co. The new company plans expansion in output in the line of automobile and carriage bodies. It is headed by Luther E. Spangler and Aaron M. Horst.

The Lou Dickey Lumber Co., Fitzgerald, Ga., is contemplating the reconstruction of its planing mill and plant at Argyle, Ga., recently destroyed by fire, estimated to cost in excess of $50,000 with equipment.

The Old Dominion Ice Corporation, Louisville, Ky., R. M. Watt, manager, is arranging for the erection of a one-story ice-manufacturing plant at Norton, Va., to cost about $100,000, of which approximately $75,000 will be used for machinery.

Ovens, power equipment, conveying machinery and other apparatus will be installed in the three-story plant, 75 x 100 ft., to be erected by the Hauswold Bakery, 2816 Edmondson Avenue, Baltimore, to cost $100,000. P. J. Hauswold is head.

The Hackley Morrison Co., 1708 Lewis Street, Richmond, Va., machinery dealer, has inquiries out for one 8-in. and one 12-in. double drum hoists, arranged for belt drive; woodworking machinery for a furniture factory; one stone crusher, No. 6, Gates type K; one 10-in. heavy duty, four-sided surfacer, and one motor-generator set, 75-hp., 3-phase, 60-cycle, 220-volt.

Pittsburgh

PITTSBURGH, Nov. 23.

MACHINE tool business the past week has been more quiet than recently. There seems to be no material recession in inquiries, but the approaching holiday season and the desire to conserve money for year end statements, possibly accounts for the lack of disposition to place orders.

Ovens, power equipment, conveying and other machinery will be installed in the new plant to be built by the Ward Baking Co., 3100 Liberty Avenue, Pittsburgh, for which plans have just been filed. It will cost $250,000. Headquarters are at 367 Southern Boulevard, New York.

The Transverse Passenger Railway Co., Pittsburgh, will proceed with the construction of a one-story car barn with shop facilities at 4721 Plummer Street, to cost about $40,000.

The Standard Seamless Tube Co., 313 Sixth Avenue, Pittsburgh, has plans for a one-story addition, 75 x 600 ft., primarily for storage and distributing service, to cost $60,000.

The Board of Education, Fulton Building, Pittsburgh, is considering the installation of manual training equipment in the proposed Sherron Hill junior high school, for which plans are being drawn, estimated to cost $1,000,000. James T. Steen & Sons, Vandergrift Building, are architects.

The Portsmouth By-Products Coke Co., Williamson, W. Va., is said to have plans for a new steel tipple for its three mining properties at Freeburn, to cost $175,000 with machinery.

The Carbon Concrete Brick Co., recently formed as a subsidiary of the Bessemer Limestone Co., Youngstown, Ohio, with capital of $100,000, will soon begin work on a new plant at Hillsville, Pa., for the manufacture of concrete-limestone bricks, blocks, etc. It will cost approximately $65,000 with machinery. Robert Bentley heads the company.

The J. P. Keeley Coal Co., Wilsonburg, W. Va., is reported to be planning to rebuild the tipple at its White Man mine recently destroyed by fire.

The Edwin Bell Co., South Seventeenth Street, Pittsburgh, manufacturer of kegs, barrels and other cooperage products, is said to be considering an addition to its mill at Beaver Falls, Pa., to cost $40,000.

A building permit has been secured by the Pittsburgh Garage Co., Pittsburgh, for its proposed service, repair and garage building on Fourth Avenue, to cost $150,000 with equipment.

Cleveland

CLEVELAND, Nov. 23.

SALES of machine tools in single orders and small lots are holding up in good volume and business is well scattered. An order from France for 12 turret lathes was placed with a local manufacturer during the week. The Eaton Axle & Spring Co. purchased some additional equipment in both new and used machines. The Nickel Plate Railroad has sent out a preliminary list of 15 to 20 machines with a view of getting prices in preparation for its 1926 budget. The Cleveland Punch & Shear Works Co. purchased a 96 x 96 in. x 24 ft. planer. The Midland Steel Products Co. is inquiring for a slab milling machine with 96-in. table and two heads. The Ford Motor Co. bought a 24-in. vertical crank slotter.

J. J. Puskar, 205 East Capitol Street, Columbus, Ohio, has awarded a general contract to L. R. Moore, 2524 Sherwood Road, for a one-story factory, 57 x 100 ft., for the manufacture of automobile springs.

The Defiance Rubber Co., Defiance, Ohio, has placed contract with Marvin Gallup, Defiance, for a one-story factory, 60 x 100 ft.

The American Seating Machine Co., Springfield, Ohio, has placed contracts for a one-story factory, 100 x 210 ft. Frank Hill Smith, 32 East Second Street, Dayton, is the engineer. The structural steel contract has been awarded to the Dayton Structural Steel Co.

The Claus Cutlery Co., Fremont, Ohio, contemplates the erection of a three-story and basement building, 50 x 80 ft. Henri Claus is president.

The Stewart Brothers Paint Co., Alliance, Ohio, will erect a two-story and basement factory, 40 x 80 ft. Albrecht & Wilhelm, 313 Union Building, Cleveland, are the architects.

The Summit Brick Co., Summitville, Ohio, is having plans prepared for a power plant, 25 x 40 ft., and a one-story factory, 40 x 120 ft.

The Willard Storage Battery Co., Cleveland, has placed the general contract for a one-story building, 42 x 86 ft.

The Champion Spark Plug Co., Toledo, Ohio, has awarded contract to Speiker & Co., Toledo, for a six-story building.

The Midwest Box Co., Circleville, Ohio, has placed contract for a two-story and basement factory, 74 x 180 ft. The De Vore Co., Nicholas Building, Toledo, is the architect.

The Cleveland Cap Screw Co., Cleveland, will shortly begin construction of a three-story and basement extension which will provide about 20,000 sq. ft. of additional floor space. A new heat treating department and chemical laboratory will be included. J. W. Fribley is president; Dautal & Son are architects.

The Scully Pattern & Mfg. Co., Cleveland, has been incorporated with a capital stock of $25,000 to manufacture metal patterns and other foundry products, but for the present will confine its activities to the manufacture of Radiant gas heating stoves. The company is operating in leased quarters, but contemplates the erection of a plant next summer. It manufactures and assembles all parts and will be in the market for materials and equipment. J. P. Moran, 308 Euclid Avenue, is secretary.

Detroit

DETROIT, Nov. 23.

AN appropriation of $2,000,000 is being arranged by the Buick Motor Co., Hamilton Avenue, Flint, Mich., for expansion. New buildings will be erected and additional machinery installed to develop a capacity of 1200 complete cars per day. Work will begin at an early date.

The Saginaw Products Co., Saginaw, Mich., has arranged a fund of about $250,000 for extensions and betterments in its foundry department, including replacements of present equipment for grey iron castings. An addition will also be built to the power house.

The Monroe Auto Equipment Co., Monroe, Mich., will proceed with the construction of a one-story and basement plant, 81 x 150 ft., and 30 x 36 ft., to replace the portion of its works recently destroyed by fire. A general contract has been let to the H. K. Ferguson Co. It will cost close to $40,000. C. S. McIntyre is general manager.

The Big Rapids Creamery Co., Big Rapids, Mich., plans the installation of additional equipment at its power house, including a 70-hp. engine and auxiliary apparatus.

The Carey Co., 6197 Hamilton Avenue, Detroit, manufacturer of asbestos products, has acquired property on Livernois Street and plans the erection of a new factory. Headquarters are at Lockland, Ohio.

In addition to other buildings to be erected at its plant, the Ypsilanti Foundry Co., Ypsilanti, Mich., will build a one-story core department, 50 x 190 ft., for which plans are now in preparation. The foundry extension will be one-story, 100 x 150 ft. The work will cost $75,000. The Austin Co., Detroit, is engineer and contractor.

The Consumers Power Co., Jackson, Mich., has plans for a two-story electrical and mechanical service building, 100 x 170 ft., with equipment shops, to cost $60,000.

The Jaxon Steel Products Co., Jackson, Mich., has plans under way for a one-story addition, 140 x 170 ft., primarily for storage and distributing service.

The Board of Trustees, University of Detroit, Detroit, will proceed with the construction of a new steam power plant to cost $200,000 with equipment.

The American Brass Goods Co., Grand Rapids, Mich., is arranging for the erection of a first unit of a new local plant.

Fred J. Hutchinson and Richard M. Acker, Pontiac, Mich., have leased local property and will operate a new sheet metal working plant.

The Stewart-Warner Speedometer Corporation, 7321 Woodward Avenue, Detroit, will begin the erection of a two-story service, repair and distributing plant on Cass Avenue, 100 x 150 ft., to cost about $70,000.

The Kuhlman Electric Co., Bay City, Mich., has awarded contract to the Henry G. Webber Construction Co. for an addition, 75 x 250 ft., in which the larger sizes of transformers will be built.

Milwaukee

MILWAUKEE, Nov. 23.

MODERATELY active business continues in the machine-tool trade. Manufacturers are receiving a relatively satisfactory run of orders, both for standard types and special machines for a wide range of purposes. Automotive demand still is felt, and several local industries have yet to fill some large requirements. Opinion is that the call for equipment will continue well into the new year. The production problem is a growing one in view of the increasing scarcity of highly skilled machinists.

The Joseph Rothe Foundry Co., 620 Willow Street, Green Bay, Wis., has awarded contracts for the erection of a shop addition, about 66 x 120 and 40 x 66 ft., and is in the market for miscellaneous foundry equipment, including a sand screener. The architects are Foeller, Schober & Stephenson, Green Bay. The work will cost about $60,000 in the aggregate.

The A. F. Meckelburg Sash & Door Co., 760 Thirty-first Street, Milwaukee, will invest about $115,000 in the enlargement of its plant by the erection of an addition, 52 x 138, 76 x 131 and 58 x 122 ft., three and four stories. Inquiry is being made for a large list of motor-driven woodworking tools, power equipment and other machinery. The general contractor is the Klug & Smith Co., 69 Wisconsin Street, Milwaukee.

The A. M. Richter & Sons Co., Eighth and Madison Streets, Manitowoc, Wis., manufacturer of vinegar, is in the market for an inclined conveyor and spiral chute system for an addition to factory No. 2, which will cost about $50,000 complete. The architect is C. C. Reynolds, local.

The Trane Co., Second and Cameron Streets, LaCrosse, Wis., manufacturer of heating specialties, has let contracts for the construction of an additional story, 33 x 109 ft., on the present shop, and a one-story addition, 77 x 115 ft. The architects are Merman & Skogstad, and the general contractors are Peter Nelson & Son, both of LaCrosse. The cost of the improvement is estimated at $65,000 to $75,000.

L. J. Cobus, 892 Franklin Place, Milwaukee, is organizing a company with an authorized capitalization of $100,000 to manufacture his patented invention, a heating element for steering wheels of motor vehicles. These will be made to utilize steam, exhaust gas or electricity. The device is to be made in other forms as well. Negotiations are pending for the acquisition of a factory building.

The Badger Sheet Metal Works, 1024-1026 Regent Street, Madison, Wis., has purchased the entire business, including the tools and equipment, of the Globe Sheet Metal Works, 1100 Williamson Street, Madison, and will consolidate the operation of the Regent Street works, which will be enlarged.

The Bracket Co., Lancaster, Wis., has sold its business and equipment to the Madison, Wis., Tool & Stamping Co., which intends to enlarge its plant to accommodate the equipment.

Chicago

CHICAGO, Nov. 23.

SALES have not been in such great volume as during the previous week. On the other hand, inquiries are more numerous and cover a wide range of small and medium-sized tools. Intimations of price advances are current and deliveries are said to be still further advanced for many types of machine tools. Local dealers who attended the auction of equipment of the Midwest Engine Co., Indianapolis, report that the bulk of the machine tools was taken by users and Eastern dealers and that prices paid were surprisingly high.

The Yellow Coach Mfg. Co., Chicago, Ill., has purchased three No. 2 milling machines, a turret lathe, punch press, two sensitive drills and a small lathe. The Nash Motors Co., Kenosha, Wis., has bought several items of drilling equipment for its Milwaukee plant, and the Seaman Body Corporation, Milwaukee, purchased two sensitive drills and some tool room equipment. The Continental Motors Corporation, Muskegon, Mich., is said to have placed a large amount of production equipment, including radial drills and boring mills, through Detroit dealers. It also bought a centering machine. Miscellaneous orders of the week include a 14-in. x 6-ft. lathe and a 16-in. x 8-ft. lathe bought by a Chicago type-casting machinery builder; an 18-in. x 8-ft. geared-head lathe purchased by an Indiana electrical device manufacturer; and one centering machine, each for a Diesel engine maker and an Indiana motor car manufacturer. Makers of tin cans and builders of agricultural equipment are very active.

The American Can Co. has awarded a general contract for a four-story reinforced concrete factory addition at Maywood, Ill., to Starrett-Bilks Co., 160 North La Salle Street, Chicago, Ill.

The Clamp Nail Co., 4532 Palmer Street, Chicago, Ill., will construct a one-story factory to cost $16,000. Ender Brothers, 4910 St. Paul Avenue, Chicago, is the general contractor.

Emma E. Peters, 1721 Armitage Avenue, Chicago, will construct a one-story factory addition for light metal work, on lot 96 x 125 ft., to cost $25,000. John Keeffer, 6638 North Maplewood Avenue, Chicago, is the general contractor.

Charles F. Glaeser has purchased for $26,000 the northeast corner of Palmer and Knox Streets, Chicago, 125 x 182 ft., occupied by a new one story building containing 6000 sq. ft. It will be used for the manufacture of laundry machines.

The Illinois Glass Co., Alton, Ill., has had plans prepared for a steam power house, to cost $200,000 with equipment. Jackson & Moreland, 31 St. James Avenue, Boston, are architects and engineers.

Bids will soon be asked by the Waterway Paper Products Co., 3201 South Kedzie Avenue, Chicago, for its proposed addition, comprising one-story machine room, 80 x

300 ft., and power house, 40 x 53 ft., to cost $200,000. D. H. Burnham, 160 North La Salle Street, is architect.

The Torrant Foundry Co., Chicago, has acquired the plant and equipment of the T. A. Cummings Foundry Co., Cortlandt Street, for $175,000. The new owner will take immediate possession and will continue operations. Expansion is under consideration.

The Johnson Co., Iowa City, Iowa, is taking bids until Dec. 8 for a new machine shop, 45 x 60 ft., for which plans have been drawn by G. M. Griffith, Iowa City, engineer.

The Chicago & Northwestern Railroad Co., 226 West Jackson Boulevard, Chicago, has plans for a new one-story carwheel shop at its works at Winona, Minn., to cost $35,000.

The Woodruff Ice Co., Peoria, Ill., has plans for a five-story cold storage and refrigerating plant, 75 x 100 ft., to cost $125,000 with machinery. Hewitt & Emerson, Peoria Life Building, are architects.

Plans are nearing completion for a three-story and basement industrial school, 64 x 245 ft., at Rochester, Minn., to cost $300,000 with equipment. Bids will soon be asked on general contract. F. H. Tustison, 430 Oak Grove Street, Minneapolis, Minn., is engineer; H. H. Crawford, Dental Building, Rochester, is architect. The Board of Education is in charge.

The City Council, Mankato, Minn., plans the installation of pumping machinery in connection with extensions and improvements in the municipal waterworks, for which bonds in amount of $125,000 have been authorized.

The Gardner Governor Co., Quincy, Ill., manufacturer of pumps, compressors and kindred products, has plans for a one-story addition, 100 x 250 ft., to cost about $65,000. Frank D. Chase, 720 North Michigan Avenue, Chicago, is architect and engineer.

The County auditor, 104 Court House, Minneapolis, Minn., is asking bids until Dec. 9, for pumping equipment and auxiliary machinery, including two 1000-gal. per min. vertical centrifugal pumps, motor-driven; one 8000-gal. per min. horizontal centrifugal pump, engine-driven, and, alternate item, one 15,000-gal. per min. pump, engine-driven.

The Ellendale Electric Co., Ellendale, N. D., plans extensions and improvements in its power house, including the installation of a generating unit and accessory equipment.

The Buick Motor Sales Co., 6237 South Ashland Avenue, Chicago, has awarded a contract to the West Englewood Construction Co., Chicago, for a one-story service, repair and garage building, 150 x 150 ft., to cost $100,000 with equipment. R. W. Stott, 7900 Ashland Avenue, is architect.

Cincinnati

CINCINNATI, Nov. 23.

MACHINE tool sales decreased considerably the past week, but the large number of inquiries before the trade indicates that buying throughout the remainder of the year will attain generous proportions. Reports from Roanoke, Va., state that recommendations regarding the tools for the Norfolk & Western Railroad are now in the hands of the purchasing department which is expected to close for the equipment within a week to 10 days. The Louisville & Nashville Railroad, Louisville, has an inquiry for seven lathes which is still pending, while several other carriers are in the market for single machines. Buying by the automotive industry has slackened temporarily, but Detroit makers are said to be negotiating for considerable machinery.

The Remy Electric Co., Anderson, Ind., bought four tool room lathes and the Steel Products Co., Springfield, Ohio, closed for a vertical shaper. The Rahn-Larmon Co. sold a special automatic axle housing lathe to the General Motors Corporation, Detroit. The Richardson Machine Co., Birmingham, purchased two lathes from a Sidney, Ohio, builder, according to local reports. The Navy Department bought a large lathe for use at New London, Conn., while several lathes have been booked for delivery to Texas and to New Jersey.

Planer builders state that inquiries are plentiful and that the outlook is encouraging. Orders for shapers have slumped and there is less interest in drills. Production, however, continues on a liberal scale and it is impossible to obtain early deliveries on certain types of machines. In some instances buyers are unable to secure tools in less than three to four months.

Johns-Manville, Inc., New York, has purchased a one-story monitor type factory building, containing 40,000 sq. ft., and adjacent land at Seventy-first Street and the Baltimore & Ohio Railroad, Cincinnati, from the Pollak Steel Co. Several buildings for the manufacture of asbestos slate shingles will be erected.

The Duro Pump Mfg. Co., 537 Monument Avenue, Dayton, Ohio, will erect a four-story factory, 70 x 200 ft., adjoining its present plant. The cost is estimated at $175,000. Schenk & Williams, Mutual Home Building, Dayton, are the architects.

The Gravely Motor Plow & Cultivator Co., Dunbar, W. Va., manufacturer of motor-driven plows and cultivators, is reported to be contemplating the removal of its plant to Dayton, Ohio.

The Board of Education, Cincinnati, will soon start erection of the Western Hills high school, plans for which have been drawn by Garber & Woodward, Cincinnati, architects. The cost, including equipment for the manual training department, is estimated at $1,000,000.

The Perkins-Campbell Co., 626 Broadway, Cincinnati, manufacturer of hardware specialties, is considering extensions and improvements in its plant to cost about $50,000. B. W. Campbell is president.

The Columbus Railway, Power & Light Co., Columbus, Ohio, is disposing of a preferred stock issue of $2,500,000, a portion of the proceeds to be used for extensions and improvements, including work on the new Picway power plant, now in progress on the Scioto River, near the city limits.

The Mills Equipment Co., Chattanooga, Tenn., machinery dealer, has inquiries out for two 10-ton gasoline locomotives, 36-in. gage; one 12 to 16-in. suction dredge; 1-yd. capacity dipper dredge, and one gas-operated shovel, with clamshell bucket, Northwest type.

The Tennessee Electric Power Co., Chattanooga, Tenn., is completing plans for a proposed hydroelectric power development on the Ocoee River, near Blue Ridge, Ga., with initial capacity of 22,000 hp. A power dam and artificial reservoir will be constructed. The entire project will cost about $2,500,000.

The Worthington Pump & Machinery Corporation, Laidlaw Works, Elmwood, Cincinnati, has awarded a general contract to the H. K. Ferguson Co., Cleveland, for a one and four-story addition, 115 x 140 ft., to cost about $130,000.

The Beare Ice & Coal Co., Jackson, Tenn., will make extensions and improvements in its three local ice-manufacturing plants, with the installation of additional machinery to cost $70,000.

The Duro Pump Mfg. Co., Dayton, Ohio, has asked bids for its proposed four-story addition, 70 x 200 ft., to cost about $175,000 with machinery. Schenck & Williams, Mutual Home Building, are architects.

The Southland Lime Co., Nashville, Tenn., Thomas H. Warren, 306 Union Street, president, has been organized to take over and expand a number of companies in this district. Work will soon begin on extensions in several of the mills and the installation of additional machinery.

M. C. Blackford, Spring and Franklin Streets, Delaware, Ohio, is in the market for a used shearing machine.

The Oakwood Mfg. Co., Harvey and Morelia Avenues, Knoxville, Tenn., manufacturer of furniture, has tentative plans for a three-story addition, to replace the portion of its factory recently destroyed by fire. Additional equipment will be installed. Howard Van Gilder is general manager.

Indiana

INDIANAPOLIS, Nov. 23.

GEORGE L. MESKER & CO., 100 North First Street, Evansville, Ind., manufacturer of grey iron and other castings, will begin the erection of a one-story foundry addition, 50 x 150 ft., to cost about $28,000.

The Ball Brothers Co., Muncie, Ind., manufacturer of glass jars and other containers, is said to have concluded negotiations with the Schram Glass Mfg. Co., St. Louis, for the purchase of its three plants at Hillsboro, Ill.; Huntington, W. Va.; and Sapulpa, Okla., for about $1,000,000. The new owner plans enlargements and the installation of considerable additional machinery.

The Hoyt Tool & Engineering Co., Indianapolis, has filed plans for a one-story shop to cost $12,000 exclusive of equipment.

The Western Gas Construction Co., Fort Wayne, Ind., has plans for a one-story plate shop and welding works, 140 x 450 ft., in the vicinity of East Pontiac Street and the line of the Pennsylvania Railroad, to cost $225,000 with equipment.

The General Electric Co., 1635 Broadway, Fort Wayne, Ind., has plans for a one-story addition to its Fort Wayne Electric Works, 50 x 100 ft., to be known as building No. 11, to cost $30,000.

Ovens, power equipment, conveying machinery and other equipment will be installed in the new baking plant to be constructed by the Model Baking Co., New Albany, Ind., at Bedford, Ind., to cost about $80,000. Arthur Loomis, Todd Building, Louisville, is architect.

The Remy Electric Co., Anderson, Ind., a division of the General Motors Corporation, manufacturer of automotive starting and lighting equipment, is arranging the early operation of a branch plant at Muncie, Ind., using a building owned by the parent organization. It will be known as Remy plant No. 3.

The Calumet Gas & Electric Co., Michigan City, Ind., operated by the Midland Utilities Co., 72 West Adams Street, Chicago, is having plans drawn by Sargent & Lundy, 72 West Adams Street, engineer, for a proposed steam-operated electric generating plant, to cost about $5,000,000 with transmission system.

Employees of the Inter-State Car Co., Indianapolis, under the direction of Eugene H. Darrach, president and treasurer, have formed the Inter-State Car & Foundry Co., capitalized at 1000 shares of stock, no par value, to take over and operate the present plant and business. The new organization will expand the foundry end of the business. It will be headed by Leo R. Meyer, George J. Diver and Frank B. Stout.

The Ohio Valley Roofing Co., 226 Division Street, Evansville, Ind., will proceed with the construction of a new three-story plant, 105 x 156 ft., for which a contract has been let to the M. J. Hoffman Construction Co., Furniture Building, to cost about $75,000 with equipment. A. J. Becker is general manager.

The Penfield Axle Co., Peru, Ind., including property and buildings, equipment, manufactured products and material in process of manufacture, has been disposed of at public auction by the Wabash Valley Trust Co., acting trustee.

St. Louis

ST. LOUIS, Nov. 23.

BIDS will soon be asked by the Southern Wheel Co., Keystone Building, Pittsburgh, manufacturer of car-wheels, for its proposed plant on Goodfellow Avenue, St. Louis., consisting of a group of buildings with main one-story foundry, estimated to cost $250,000 with equipment. The Pitzman Engineering & Surveying Co., 615 Chestnut Street, St. Louis, is engineer. Frank C. Turner is first vice-president.

The International Harvester Co., 608 South Michigan Avenue, Chicago, will soon begin superstructure for a three-story and basement, 65 x 100 ft., factory branch and service building at Parsons, Kan., to cost $90,000 with equipment.

The Oil Well Supply Co., 215 Water Street, Pittsburgh, is said to be arranging to rebuild the portion of its plant at Poplar Bluff, Mo., recently destroyed by fire with loss close to $50,000 including equipment.

The Congress Garage Co., 3619 Broadway, Kansas City, Mo., E. J. Willett, head, will proceed with the construction of a new five and six-story service, repair and garage building at 3525 Broadway, to cost $500,000 with equipment. Robert Garnell, company address, is architect.

The Board of Education, Olathe, Kan., is considering the installation of manual training equipment in its proposed two-story and basement high school, to cost $150,000. W. H. Sayler & Co., Mutual Building, Kansas City, Mo., are architects.

The Cassville Ice Co., Cassville, Mo., is contemplating the erection of a new one-story ice-manufacturing plant to cost $35,000 with machinery. W. E. Bodine is head.

H. N. Van Fleet, Carthage, Mo., is planning the erection of a one-story mill, 100 x 200 ft., at Joplin, Mo., for the manufacture of sash, doors and other millwork products, to cost $45,000. It will replace a plant recently destroyed by fire.

Charles Page, Sand Springs, Okla., operating local textile mills and other industrial enterprises, is said to have tentative plans under consideration for a hydroelectric power development on the Illinois River, near Watts, Okla., to cost $350,000.

The Massey-Harris Implement Co., Hutchinson, Kan., has plans for a one-story and basement works, 120 x 140 ft., on Easley Street, to cost $30,000.

Bids will soon be asked by the Christian Brothers College, 1225 Henry Street, St. Joseph, Mo., for a three-story commercial and industrial high school, to cost $250,000. Maurice Carroll, Ridge Arcade, Kansas City, Mo., is architect.

The Koch Butchers' Supply Co., 519 Wyandotte Street, Kansas City, Mo., has leased a two-story building, 117 x 300 ft., for a new plant to manufacture refrigerators, refrigerating apparatus, etc. Millard Mayer is president.

C. F. and G. A. Malzahn, Perry, Okla., have plans for a one-story machine shop, to cost about $18,000.

The Missouri Pacific Railroad has bought an 1100-lb. steam hammer.

Gulf States

BIRMINGHAM, Nov. 23.

TENTATIVE plans are being considered by the Emsco Derrick & Equipment Co., 7111 South Alameda Street, Los Angeles, manufacturer of oil well equipment, oil rigs, etc., for a branch plant at Houston, Tex., reported to cost $200,000 with machinery.

Fire, Nov. 12, destroyed a portion of the power plant of the St. Johns Electric Co., St. Augustine, Fla., with loss reported at close to $50,000 including equipment. It is planned to rebuild.

The Frick Co., Waynesboro, Pa., manufacturer of ice-making and refrigerating machinery, is contemplating the erection of a branch plant at Miami, Fla.

The Common Council, Sherman, Tex., is considering the installation of pumping machinery in connection with proposed municipal waterworks, to cost about $50,000. O. J. S. Ellington, city manager, in charge.

R. E. Boggs, Age-Herald Building, Birmingham, machinery dealer, is in the market for a 1000 hp., turbo-generator, 550 volts, three-phase, 60 cycles.

The Board of Trustees, University of Texas, Austin, has completed plans for a one-story power house to cost $200,000 with machinery.

The Southern Properties, Inc., Dallas, Tex., is arranging for the erection of three ice-manufacturing plants, each to be equipped for an output of 50 tons per day. The entire project is estimated to cost $225,000 with machinery.

The Valley Electric & Ice Co., San Benito, Tex., has tentative plans under advisement for extensions and improvements in its electric light and power plant, to cost $35,000 with equipment. Frank C. Ludden is general manager.

The Florida Block & Tile Mfg. Co., 300-A South Miami Avenue, Miami, Fla., has acquired property at Twentieth Street and the Curtis Road, and contemplates the construction of a new plant for the manufacture of ceramic tile and kindred products, to cost $28,000 with machinery. The company was recently organized by John J. Barclay and John Quinn.

Nants & Co., Inc., Live Oak, Fla., has tentative plans for a new local mill for the manufacture of crates, baskets and kindred products. It is planned to develop a capacity of 5000 crates and baskets per day. W. E. Nants is general manager, in charge.

The Kingsville Produce & Milling Co., Kingsville, Tex., is contemplating the erection of a one-story ice-manufacturing and refrigerating plant, to cost $50,000.

The Herfurth Engine & Machinery Co., Kissimee, Fla., has inquiries out for a sand pumping outfit, for operation with oil engine.

Bids will be received by the Board of City Commissioners, Port Arthur, Tex., for water purification equipment until Dec. 10, including two high head centrifugal pumps and two low head centrifugal units, with complete auxiliaries. The Burns & McDonnell Engineering Co., Interstate Building, Kansas City, Mo., is engineer.

The Electric Ice Co., Inc., 414 Carondelet Street, New Orleans, will proceed with the construction of a new ice-manufacturing plant at Hattiesburg, Miss., for an initial output of 20 tons per day.

C. W. Hunter, supervisor of industrial division, State Prison Farm, Tallahasse, Fla., is planning to purchase equipment for the manufacture of automobile license tags, for installation at the institution.

The Texas Utilities Co., Plainview, Tex., has plans under way for a one-story ice-manufacturing plant at Colorado, Tex., to cost about $100,000 with machinery.

The Town Council, Harahan, La., plans the installation of centrifugal pumping equipment in connection with a proposed municipal waterworks.

Ovens, power equipment, conveying and other machinery will be installed in the five-story plant to be erected by the Dietzel Bakery, 120 South Alamo Street, San Antonio, Tex., estimated to cost $85,000. Morris & Noonan, Builders' Exchange Building, are architects. Louis Dietzel is president.

The Cummer Lumber Co., P. O. Box 76, Jacksonville, Fla., has preliminary work under way on a limestone prop-

erty development at Kendrick, Fla., to include the installation of quarrying machinery, steam shovels, rock crushers, engine and other power equipment.

The Sirman Oil Co., Brownwood, Tex., is planning the construction of a pipe line from the oilfields in the northern part of Brown County to Brownwood, about 17 miles. Work will begin early in the coming year and completed in May. The company recently acquired the property of the Charter Oil Co., in this section. J. S. Sirman is president.

Pacific Coast

SAN FRANCISCO, Nov. 18.

PLANS are nearing completion for a one-story building, 130 x 140 ft., for the Percival Iron & Steel Co., 232 Aliso Street, Los Angeles. It will be equipped largely for storage and distributing service, including two 3-ton electric traveling cranes. Two crane runways, 70 x 170 ft., will be built.

The Advance Auto Body Co., 1000 Macy Street, Los Angeles, has awarded a general contract to the Badt-Falk & Bergendahl Co., 1316 Bartlett Building, for its proposed two-story plant, 100 x 160 ft., to cost about $75,000 with equipment.

Fire, Nov. 16, destroyed a portion of the plant of the Technical Glass Works, Inc., Los Angeles, with loss estimated at $250,000, including equipment. It is planned to rebuild.

The Coast Valleys Gas & Electric Co., Salinas, Cal., is considering the construction of a new automatic power substation at Monterey, to cost about $100,000 with equipment; also, for a smaller station at Carmel, to cost about $45,000.

The Hutchinson Revolving Window Co., care of E. D. Germain, 113 Barnes Building, Longview, Wash., has tentative plans under consideration for new works to manufacture a patented window and frame, to cost about $90,000 with equipment.

The Northwest Steel & Metal Products Co., Seattle, will soon break ground for a new plant on the Lake Union Canal, to cost $250,000 with machinery. Abraham Goldberg is president.

The Condit-Woodley Co., Transportation Building, Long Beach, Cal., contemplates the installation of a cold storage and refrigerating plant in a proposed four-story warehouse at Long Beach harbor, reported to cost $200,000. J. M. Post is vice-president.

The Empire Ice & Shingle Co., 1805 West Sinto Street, Spokane, Wash., has plans for a new one-story ice-manufacturing plant.

The Ballard Drop Forge Co., whose plant at Ballard, Wash., was recently destroyed by fire, announces it will at once rebuild on a larger scale. Some new equipment will be needed.

R. W. Lincoln, 1106 Killingsworth Avenue, Portland, Ore., and associates have applied for permission to use waters from the Toutle River, a tributary of the Cowlitz River in Washington, for a proposed hydroelectric power development to cost about $3,000,000.

Foreign

IN connection with improvements at Cochin Harbor, Calcutta, India, the State Government plans the construction of a power house and the installation of equipment for freight hoisting, conveying and handling. The American Consulate, Calcutta, De Witt Simonson, vice-consul, has information regarding the project.

The Municipal Council, Sydney, Australia, is asking bids until Feb. 22, for power house switch gear and auxiliary machinery for a proposed municipal power plant in the city, with capacity of 150,000 kw. Specifications at the office of the Bureau of Foreign and Domestic Commerce, 734 Customhouse, New York, until Nov. 28; from Nov. 30-Dec. 5, 76 West Monroe Street, Chicago; and thereafter Electrical Equipment Division, Washington.

Falcke-Hoffman & Co., Inc., 59 Pearl Street, New York, has inquiries out for metal safe boxes for jewelry, provided with alarm, in three sizes, weighing up to 26 lb., for a Central America interest.

M. Gourvitch, care of the Amtorg Trading Corporation, 165 Broadway, New York, representing a combination of Ukraine and South Russia chemical industries, known as the Chemugol, is now in this country with view to purchasing equipment and materials for various plant expansion, estimated to cost $1,700,000.

NEW TRADE PUBLICATIONS

Heavy-Duty Diesel Engines.—Anderson Engine & Foundry Co., Anderson, Ind. Bulletin 33 of 20 pages describes and illustrates type KD heavy-duty vertical engines for direct connection to generators or for belt or other drive for machinery. The r.p.m. are arranged for synchronous speeds for standard stock generators. Powers range from 50 to 360 hp., with floor space from 62 x 81 in. to 66 x 252 in. The height above floor is about 10 ft.

High-Speed Fans.—American Blower Co., Detroit. Bulletin 6103 of 32 pages describes a Sirocco fan for direct-connected motor drive and designed for use in manufacturing and other plants. The bulletin gives numerous tables of capacities and speeds under varying conditions and with various sizes of operating units.

Dustless Floors.—Goheen Corporation, Newark, N. J. Leaflet describing Rockote—a product said to prevent dusting of concrete floors and to provide a hard, dustproof surface to such floors.

Modern Materials Handling Methods.—The Westinghouse Electric & Mfg. Co. Circular No. 7378, which outlines the beneficial results to be obtained in the various industries through the use of electrically driven machinery for the handling of materials. Information and data are shown covering the principal groups of materials handling machines, giving uses, typical outputs and the electrical equipment best suited for their successful operation, and the circular describes the company's own electrical equipment for materials handling machinery. Cranes, hoists, winches, conveyors, coal loading machines, freight elevators, trucks, locomotives and dredges are some of the types of equipment that are described and illustrated.

Gear Speed Reducing Units.—Philadelphia Gear Works, Richmond and Tioga Streets, Philadelphia. Four-page bulletin No. 10-25, regarding types of worm gear and spur gear speed reducers.

Air Drills.—Chicago Pneumatic Tool Co. Folder devoted to the Red Giant line of air drills and reamers, largely for railroad use. Detailed dimensions are given in the tables, together with capacities and other particulars.

Carbon Dioxide Recorder.—Uehling Instrument Co., Paterson, N. J. Bulletin 118 describes the Apex CO_2 recorder, while Bulletin 118-A gives the principles of operation of the Apex CO_2 meter. The recorder is designed to aid in providing a correct air supply for boiler use.

Polyphase Induction Motors.—Allis-Chalmers Mfg. Co., Milwaukee. Bulletin 1132 of 4 pages describes types AR and ARY motors with cast steel frames and Timken tapered roller bearings. Details of construction are pointed out, with the aid of sectional views.

Garage and Shop Equipment.—Manley Mfg. Co., York, Pa. Wrecking cranes for garage and shop use, together with winches of various descriptions and towing trucks, are described in an 8-page folder, well illustrated.

Water Softening.—National Lime Association, 918 G Street, N. W., Washington. Bulletin of 48 pages forming in effect a treatise on the subject of water softening, with a large amount of statistical information and a number of illustrations. It is issued in the interests of the members of the association.

Coal Excavating Machinery.—McKinlay Mining & Loading Machine Co. and Marietta Mfg. Co., Point Pleasant, W. Va. Bulletins devoted to rotary cutting machines for boring into coal seams and loading the material as cut. The machinery is adaptable to other material as gypsum, shale, clay, etc., and is being developed for driving tunnels in hard rock and for similar mining work.

Plant Engineering.—Frank D. Chase, Inc., Chicago. "The Survival of the Fit" is the title of a pamphlet which discusses plant location, layout, expansion, etc.

Rope Drive.—Allis-Chalmers Mfg. Co., Milwaukee. Bulletin No. 1228, October, 1925, of 16 pages discribes Allis Texrope Drive, a flexible and positive multiple belt drive for close centers.

Report of the Underwriters' Laboratories, Chicago, upon the Simplex track jack made by Templeton, Kenly & Co., Ltd., Chicago, forms the subject of a 58-page pamphlet detailing tests, service record and description of this form of lifting device. Some improvements in the jack, suggested by the laboratories, have been made by the manufacturer. The jacks are intended for track work.

Industrial News Notes

The Driver-Harris Co., Harrison, N. J., has purchased the works and properties of the Electrical Alloy Co., Morristown, N. J. The Morristown plant will be operated as the electrical alloy division of the Driver-Harris Co. and the main executive offices and sales department will be concentrated at Harrison. The Morristown plant has been acquired for increased manufacturing facilities. A much larger research and development department will be maintained and the company feels that, by this larger department, it will be able to render a distinct service to the electric heating and allied industries.

The Lyon Iron Works, Greene, N. Y., making a line of foundry and machine shop products distributed through Fink-Dumont-White, Inc., New York, has recently been reorganized. F. P. Fink and R. B. Dumont have purchased a substantial interest in the Lyon works and have been elected vice-president and secretary and treasurer, respectively. George G. Raymond continues as president and general manager.

The Ebenezer Electric Plating Works, Ebenezer, N. Y., has been organized to do all kinds of plating, grinding and polishing. A new shop has been built. Machinery and equipment were purchased new when the shop was completed.

The Stoker Engineering & Sales Corporation, 1533 Harrison Street, Philadelphia, is Eastern representative for the sale of the King Coal automatic stoker, manufactured by Joseph Harrington, Riverside, Ill. The corporation handles also Defender combustion control apparatus, is capitalized at $100,000 and is chartered to sell and install stokers and all kinds of boiler room devices and combustion apparatus. The president and general manager is Byron T. Mottinger; first vice-president, H. A. Ruetschi; second vice-president, David W. McDowell; secretary, James Donaldson, and treasurer, William J. Craig. The corporation will be in the market for common and fire bricks, furnace arches, feed-water heaters, pipes, valves and fittings, fire clays and cements, motors and electrical appliances, and other allied products.

The Goodell Pratt Co., Greenfield, Mass., small tools, has closed its Shelburne Falls, Mass., tool plant.

The Magnetic Mfg. Co., Milwaukee, Wis., manufacturers of magnetic pulleys and separators, announces that Page & Ludwick, 14 East Jackson Boulevard, Chicago, will represent it in the Chicago district. Page & Ludwick have also been appointed agents in the Chicago district for the Thomas Flexible Coupling Co., Warren, Pa.

The Air Preheater Corporation, 25 Broadway, New York, manufacturer of the Ljungstrom Air Preheater, is a consolidation of James Howden & Co. of America, Inc., and the Ljungstrom interests of Stockholm, Sweden. The newly formed corporation takes over all Ljungstrom patent rights, together with the shops of James Howden & Co. of America, Inc., at Wellsville, N. Y. B. G. Brolinson has been elected president and W. L. Batt, president of S. K. F. Industries, Inc., is chairman of the board of directors.

Ralph Staley and Henry A. Schrantz have purchased the Canton Auto Spring Co., Canton, Ohio, and will continue to carry a complete stock of automobile and truck springs and bumpers, at the same time offering service in re-arching and retempering springs and straightening axles.

Briggs & Turivas, 110 South Dearborn Street, Chicago, dealers in scrap metals, has purchased eighteen acres of land south of the Indiana Harbor Belt Line and east of Western Avenue, Blue Island, Ill. This newly acquired property is adjacent to their former holdings and will be used for the purpose of extending their local plant.

The Wellman-Seaver-Morgan Co., Cleveland, has taken a contract for two 10-ft. gas producers for the Reading Iron Co., Reading, Pa.; two 10-ft. producers for the West Virginia Pulp & Paper Co., Piedmont, W. Va.; one 8-ft. producer for the Stauffer Chemical Co., Chester, Pa.; six Chilean mills for South African mines and 25 open-hearth charging cars for the Otis Steel Co., Cleveland.

As a side light on the activity in the foundry supply business, sales of tumbling barrels are reported by the W. W. Sly Mfg. Co. to the Link Belt Co., Indianapolis; Rome Stove & Range Co., Rome, Ga.; American Brake Shoe & Foundry Co., Baltimore; Farrell-Cheek Steel Co., Sandusky, Ohio; Lakey Foundry Co., Muskegon, Mich., and Leonard Baker Stove Co., Taunton, Mass. Sand blast mills have been purchased by the Lincoln Foundry Co., Lincoln, Neb., and the Fort Pitt Malleable Iron Co., Pittsburgh. The Delco Light Co., Dayton, Ohio, has bought a sand blast room.

The Calcos Steel & Iron Co., Philadelphia, has moved into its new warehouse at 1330 North Thirtieth Street, in that city, carrying stocks of bars, angles, bands, tire steel, etc.

The Chase Brass Companies, Inc., on Nov. 1 opened a warehouse at 134 Lafayette Street, New York, to cover stocks of brass, bronze and copper in tubes, sheet and rod form.

The Crane Co., Chicago, is opening up a new distributing plant in Mason City, Iowa, to furnish plumbing supplies, etc., to northern Iowa and southern Minnesota. It hopes to have the building completed by Jan. 1 and is assured a ready market in the territory. Besides the Crane Co. project, others now under way are branches of Swift & Co. and Standard Oil Co. of Indiana.

Suburban Bronze & Iron Corporation, Atlantic Avenue and 107th Street, Richmond Hill, N. Y., has been organized, to do bronze and iron work of all descriptions for office buildings, hotels and banks, and other miscellaneous work such as stairs, railings, gratings, ladders, gates, saddles, window guards, grille work, etc. The plant is built and manufacturing will be by contract. The company will be in the market for materials.

My T Fine Gas Range Co., South Bend, Ind., has been incorporated for $225,000 for the purpose of taking over the Matthews Banner Range Co., South Bend. At present the company is at 2511 West Sample Street, in a plant owned by the Range Realty Co. It intends to carry on the manufacture of the Matthews Banner gas range, and will be in the market for materials. The officers are: Roy W. Fries, president; Tom Williams, vice-president; Shirley Jackson, secretary, and Barry Scanlon, treasurer. The board of directors includes also Sam P. Schwartz.

The Perrigo Foundry & Machine Co., Beloit, Wis., has amended its corporate articles to provide for a change in title to the Progressive Mfg. Co. John Halvorsrud is president, and W. S. Perrigo, secretary.

The Universal Foundry Co., Oshkosh, Wis., has increased its authorized capitalization from $25,000 to $50,000 to accommodate the growth of its business and provide for increased output.

The Railway Safety Brake Lock Corporation, recently incorporated with headquarters at Tacoma, Wash., P. O. Box 139, has not decided whether or not it will manufacture locks in a plant of its own or contract for them, as has been done in the past. The lock is a device for use on railroad cars without interfering with existing equipment. B. W. Webster is president and B. R. Lewis is treasurer.

Trade Changes

The R. K. LeBlond Machine Tool Co., Cincinnati, manufacturer of lathes and milling machines, and the Smith & Mills Co., Cincinnati, manufacturer of shapers, has appointed the Stoer Machinery Co., Philadelphia, sales agent in Philadelphia territory.

The Roller-Smith Co., 233 Broadway, New York, announces that its Knoxville, Tenn., agent, the Tennessee Engineering & Sales Co., has opened a branch office at 493 North Boulevard, Atlanta. The company's New England agent, the Detweiler-Bell Co., now has its main office at 101 Milk Street, Boston, and has a branch office at 152 Temple Street, New Haven. Paul G. Detweiler and R. H. McCormick are located in the Boston office and F. M. Lord is in the New Haven office.

The Cleveland office of the Sullivan Machinery Co., hitherto at room 701 Rockefeller Building, has moved to room 1506 in the same building, to secure needed additional space. R. T. Stone is manager. The company has moved its office in Sydney, New South Wales, R. D. Willets, manager, to the Kembla Building, Margaret Street.

The Chicago Fuse Mfg. Co., Chicago, manufacturer of Union and Gem fuses and Union outlet and Gem switch boxes, has moved its Detroit office from the Transportation Building to 429 Wayne Street.

A branch office and salesroom has been opened at 338 Third Avenue, Pittsburgh, by the Norton Co., Worcester, Mass. A stock of grinding wheels will be carried. Ralph O. Anderson continues as district manager.

The Union Mfg. Co., New Britain, Conn., has appointed the Strong, Carlisle & Hammond Co., Cleveland, its sole distributor for that territory for the complete line of lathe, drill and planer chucks.

E. D. Giberson & Co., Inc., 40 Rector Street, New York, has removed its Havana, Cuba, offices from the Royal Bank of Canada Building to Avenida de la Republica 119. M. Grassi is the new Havana manager, superseding D. L. Monjo. The company specializes in boiler tubes and other iron and steel products.

M. A. Hughes, Railway Exchange Building, Seattle, Wash., has been appointed representative of Foote Brothers Gear & Machine Co., Chicago.

Current Metal Prices

On Smal' Lots, Delivered from Stocks, New York

THESE prices are given for the convenience of small-lot buyers whose requirements do not run into mill-size orders.

Only base prices can be listed in some cases, due to limits of space; other items of a given group are deducible from the base price.

The prices which are quoted below are those at which small lots may be bought, whether from jobbers' or other stocks.

Complete market reports and prices on large shipments from mills will be found elsewhere under "Iron and Steel Markets" and "Non-Ferrous Metals."

Bars, Shapes and Plates

	Per Lb.
Bars:	
Refined iron bars, base price	3.24c.
Swedish charcoal iron bars, base	7.00c. to 7.25c.
Soft steel bars, base price	3.24c.
Hoops, base price	4.49c.
Bands, base price	3.99c.
Beams and channels, angles and tees, 3 in. x ¼ in. and larger, base	3.34c.
Channels, angles and tees under 3 in. x ¼ in. base	3.24c.
Steel plates, ¼ in. and heavier	3.34c.

Merchant Steel

	Per Lb.
Tire, 1½ x ½ in. and larger	3.30c.
(Smooth finish, 1 to 2½ x ¼ in. and larger)	3.65c.
Toe-calk, ½ x ⅝ in. and larger	4.20c.
Cold-rolled strip, soft and quarter hard	6.25c. to 6.75c.
Open-hearth spring steel	4.50c. to 7.00c.
Shafting and Screw Stock:	
Rounds and hex	4.00c.
Squares and flats	4.50c.
Standard tool steel, base price	12.00c.
Extra tool steel	15.00c. to 18.00c.
Special tool steel	20.00c. to 23.00c.
High-speed steel, 18 per cent tungsten	70c.

Sheets

Blue Annealed

	Per Lb.
No. 10	3.89c.
No. 12	3.94c.
No. 14	3.99c.
No. 16	4.09c.

Box Annealed—Black

	Soft Steel C. R. One Pass Per Lb.	Long Terne Sheets Per Lb.
Nos. 18 to 20	3.95c. to 4.10c.	5.75c.
Nos. 22 and 24	4.20c. to 4.35c.	5.90c.
No. 26	4.25c. to 4.40c.	6.05c.
No. 28*	4.35c. to 4.50c.	6.35c.
No. 30	4.55c. to 4.70c.	6.85c.

Galvanized

	Per Lb.
No. 14	4.60c.
No. 16	4.75c.
Nos. 18 and 20	4.90c.
Nos. 22 and 24	5.05c.
No. 26	5.20c.
No. 28*	5.50c.
No. 30	6.00c.

No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

Welded Pipe

Standard Steel	Black	Galv.	*Wrought Iron*	Black	Galv.
½ in. Butt	46	29	½ in. Butt	4	+19
¾ in. Butt	51	37	¾ in. Butt	11	+ 9
1-3 in. Butt	53	39	1-1½ in. Butt	14	+ 6
2½-6 in. Lap	48	35	2-in. Lap	5	+14
7 & 8 in. Lap	44	17	3-6 in. Lap	11	+ 6
11 & 12 in. Lap	37	12	7-12 in. Lap	3	+16

Bolts and Screws

Machine bolts, cut thread, 40 and 10 per cent off list
Carriage bolts, cut thread, 30 and 10 per cent off list
Coach screws, 40 and 10 per cent off list
Wood screws, flat head iron,
80, 20, 10 and 5 per cent off list

Steel Wire

Base Price† on No. 9 Gage and Coarser	Per Lb.
Bright, basic	4.10c. to 4.25c.
Annealed, soft	4.35c. to 4.50c.
Galvanized, annealed	5.00c. to 5.15c.
Coppered, basic	5.00c. to 5.15c.
Tinned, soft Bessemer	6.00c. to 6.15c.

†Regular extras for lighter gage.

Brass Sheet, Rod, Tube and Wire

BASE PRICE

High brass sheet	19⅝c. to 20⅝c.
High brass wire	20⅛c. to 21⅛c.
Brass rods	17⅜c. to 18⅜c.
Brass tube, brazed	27⅝c. to 28⅝c.
Brass tube, seamless	24¼c. to 25¼c.
Copper tube, seamless	25¼c. to 26¼c.

Copper Sheets

Sheet copper, hot rolled, 23¼c. to 24¼c. per lb. base.

Cold rolled, 14 oz. and heavier, 3c. per lb. advance over hot rolled.

Tin Plates

Bright Tin Grade "AAA" Charcoal 14x20	Bright Tin Grade "A" Charcoal 14x20	Coke—14x20	Prime	Seconds
		80 lb.	$6.15	$5.90
		90 lb.	6.30	6.05
		100 lb.	6.45	6.20
IC..$11.25	$8.85	IC	6.65	6.40
IX.. 12.85	10.85	IX	7.85	7.60
IXX.. 14.40	12.55	IXX	9.00	8.75
IXXX.. 15.75	13.85	IXXX	10.35	10.10
IXXXX.. 17.00	15.05	IXXXX	11.35	11.10

Terne Plates

8 lb. coating, 14 x 20

100 lb.	$7.00 to $8.00
IC	7.25 to 8.25
IX	8.25 to 8.75
Fire door stock	9.00 to 10.00

Tin

Straits, pig	64½c. to 65c.
Bar	68½c. to 69c.

Copper

Lake ingot	15¾c.
Electrolytic	15½c.
Casting	15c.

Spelter and Sheet Zinc

Western spelter	10¾c.
Sheet zinc, No. 9 base, casks	13¼c.; open, 13¾c.

Lead and Solder*

American pig lead	10¾c. to 12¾c.
Bar lead	12¾c. to 13¾c.
Solder, ½ and ½ guaranteed	40½c.
No. 1 solder	37½c.
Refined solder	31c.

*Prices of solder indicated by private brand vary according to composition.

Babbitt Metal

Best grade, per lb.	75c. to 90c.
Commercial grade, per lb.	35c. to 50c.
Grade D, per lb.	25c. to 35c.

Antimony

Asiatic	21½c. to 22½c.

Aluminum

No. 1 aluminum (guaranteed over 99 per cent pure), ingots for remelting, per lb.	30½c. to 31c.

Old Metals

The market is lower. Dealers' buying prices are as follows:

	Cents Per Lb.
Copper, heavy crucible	12.00
Copper, heavy wire	11.75
Copper, light bottoms	9.50
Brass, heavy	7.00
Brass, light	6.00
Heavy machine composition	8.75
No. 1 yellow brass turnings	8.75
No. 1 red brass or composition turnings	8.00
Lead, heavy	8.25
Lead, tea	6.25
Zinc	5.25
Cast aluminum	19.50
Sheet aluminum	19.50